Gleanings in Bee Culture

Created to help beekeepers succeed

November -- 1950

Part of a yard ready for packing. Outer covers will be removed before paper is placed.

The Tar-Paper Pack

By C. M. Isaacson, Thief River Falls, Minnesota

There are almost as many methods of packing bees for winter as there are beekeepers doing the packing. And arguments pro and con as to the benefit of the packing itself are many. The pendulum has swung back and forth between heavy packing and no packing. Up here in Northern Minnesota, however, where a common description of our year-around weather is "nine months winter and three months bad weather" (you wouldn't move when you get used to it, though), we pack. Seriously, we usually have at least five months of winter and have been known to have over seven. Temperatures can remain really low for weeks at a time and bees have extremely long periods without flight. Brood rearing is absent or at low ebb for much of this time.

But the intent of this article is not to start anew, or join in an old controversy, so suffice it to say that we up here in the Far North have found packing profitable for us, and we have developed a method which we believe is economical, reasonably fast of application, and pro-

Above: Close-up of a pair. Note shingle strips protruding slightly at opposite corners.

Right: A load of flax straw, and used rolls of paper being thrown down preparatory to beginning a yard.

ductive of satisfactory results. It is not new — simply the straw-tar-paper pack, and we have settled with it after several other ways have been tried and discarded.

As with all methods of winter packing, there are certain basic parts to be set down. Perhaps the whole subject could be divided into three: what to prepare; how to prepare; and the actual packing. The three must be in some sort of balance if the results are to be good.

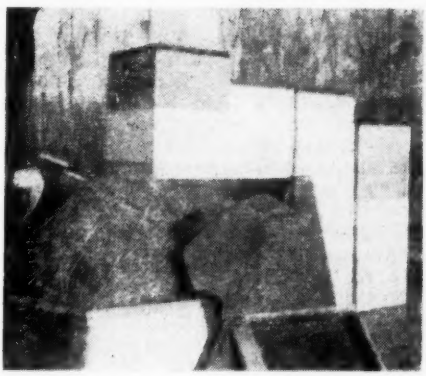
Winter Only Good Colonies

First, to repeat what has been so often stressed, don't attempt to winter outdoors anything but **good** colonies. Definitions of that may vary somewhat, but here we mean one with a dependable queen, at least five or six pounds of bees, and plenty of food in the **right place** in a two-story hive. Some of this will be mentioned in more detail later. And yards located in exposed locations or where air drainage is poor are a poor gamble—better move these for winter to where a windbreak is available (permanently unless the summer forage is unusually good), or gas them and replace the next spring. Yards protected from wind or drifting of snow, yet open to the winter sun, are best. Contrary to some belief, we have not found a deep covering of snow conducive to good wintering—too often dampness and weak or dead colonies result. Bees do not smother but moisture passes out slowly through the icy inside surface of the cave that forms around each pack.

How to prepare might include beginning with the summer grouping of colonies in your yards. We have used pair grouping for years and believe it has many year-around advantages—less drifting, quick uniting if one of a pair goes bad, ease of working, and so on. After all surplus honey is off for the season and we would be making fall inspection anyway, we set the two colonies as tightly together as possible, close or nearly close the lower entrance, and place a narrow strip of shingle between the two hive bodies of each colony—at opposite sides so as to get entrances as far apart as possible in the finished pack. If one prefers an extreme top entrance, the shingle strip can be similarly placed between the top of the hive and the inner cover. Either way seems to be satisfactory, except that I personally believe the middle opening best in an extremely severe winter. We have all colonies facing south or east. For winter this allows the front, which we leave without packing, to be warmed by periods of sunshine.

This trip is also the one in which we select the colonies we will attempt to winter and make sure that they have sufficient food. It is important also that the bulk of it be in the upper story so that as the colony moves upward during the winter, it moves onto fresh stores. Have the top body as full as possi-

Paper only partly placed around a pair to show outer cover removed. Straw has been thrown on top of inner cover to stop annoyed bees from flying. The day was warm.



A colony almost ready to put the cap and covers on. The top of paper will be folded in first. Note the lath holding the overlapped ends of the paper.

A finished pack. The twine harness can be seen and the placement of outer covers on top. Note also how straw has been heaped to make the pack higher in the center. Old paper has been used on top—hence the several layers. A single sheet of new paper is sufficient for a cap.

ble and sufficient below to induce the winter cluster to form there in the late fall. If it is on top at that time, it may starve during later periods of cold even with honey below or on the sides. This is especially true of a medium-strength colony. And remember that food includes pollen also. Just be sure that you are not deceived by pollen weight and leave too little honey. If a colony seems somewhat light and you wish to winter it, placing a partly-filled super above the inner cover (with escape hole open) will help —honey will be moved below, especially if any capped combs are scratched thoroughly.

When all inspection trips are through, cool enough weather has usually arrived so that we begin packing. The actual work of packing can be made into about as much labor as you please—but it **need**

not be a large amount. We use strips of asphalt paper cut sufficiently long to go around the two hives and allow perhaps two or three inches of packing on three sides—none in front. About 12 or more of these strips can be cut from a 500-foot roll, allowing also caps for each pack. We favor flax straw for packing material if available. It is warm, holds considerable moisture, and forms into a matted blanket that is easy to remove in the spring for early examination or at unpacking time.

Outer hive covers are removed and placed to one side—they will be used later on the pack. We then place the strip of paper around the hives so that the ends overlap a bit in front and fasten it with a single lath, watching that the lath is not directly on a corner where an entrance will be. The paper is not fastened at the bottom; neither is any type of banking used on the finished pack. We have discarded the packing case used by many—it takes extra time to no purpose, for we do not plan to pack the straw tightly (loose insulation passes off moisture more readily and is more efficient) and if care is taken to pad the corners first, the paper is seldom torn. Straw is pushed in at the sides to the ground, leaving no empty spaces, and about seven or eight inches placed on top. Be sure to heap this a bit in the center so that the finished pack will shed rain or melting snow. We leave the inner cover holes open to allow cluster moisture to escape into the packing. The heat of the sun on the black paper keeps the straw dried out well. A cap of sufficient length to run down the ends a bit is placed on top after the pack paper has been folded in, and the outer hive covers placed on this. Twine is then drawn rather tightly around and tied close to the bottom at one end, brought over to the other end, and there tied to the first twine again. A final length is drawn across and over the short way. This harness holds covers and cap securely and can easily be taken up and replaced for spring inspection. The whole procedure is simple, rapid, and devoid of frills. After a yard is packed one man can systematically go over all packs and shove a hive tool into the shingle-strip-made upper entrances while the other picks up unused supplies. The bees will eat away the paper and enlarge the entrance as they require. If the end of the shingle has been allowed to stick out a little the location will be easy to find—if an opening has not already been broken through.

Two men who understand each other can produce about the best results with this method—more are superfluous, especially if yards are small. If somewhat of an assembly line system is used, each one systematically doing certain things, they can pack up to 100 colonies in a day — with extra effort, or large yards, occasionally even more. Straw can be obtained usually for the hauling; a small gift of honey helps for the future, of course. Paper and twine costs figure to about eight cents per colony a year (if care is used during unpacking it will last three or more years—a few small holes do no harm on the sides and torn paper can be used in layers for a cap). Allowing six cents a colony for fuel and the use of a truck makes a total cost of approximately 30 cents per colony—or about three pounds of honey at present prices. Incidentally, labor cost is cut considerably by packing in pairs instead of singly.

A few additional items — when new paper is used it need not be prepared beforehand. Cut from the roll as needed, unrolling the roll in an upright position around the hives. Use the hive tool to cut with. When used paper is stored over summer, be sure it is in a dry place —asphalt paper becomes worthless fast if it becomes wet while in a roll of any size. And relative to the straw used, if it is chaffy it is a little hard to handle but is fine insulation. While unpacking, do a whole yard at once and move colonies apart to summer positions to make it easier for them to locate themselves without undue drifting. Entrances may be changed to the bottom at this time if there is no danger of high water from spring rains.

Those not believing in winter packing stress the high cost of so doing, and the lack of proportionately profitable results as versus unpacked colonies. From my own experience I know that the cost **need not be excessive**—the equivalent of three to four pounds of honey is not

a large investment. The other argument may have validity farther south, but here my experiments with unpacked colonies—no matter how well supplied with honey and pollen — have come out poorly. Packing has paid, not only in colonies brought through alive but also in the percentage of those really strong in the spring.

For those liking a few figures, wintering results from several thousand colonies under my observation (my own and others) have varied from five to thirty percent loss, with a general average of ten to twelve percent most years. We are satisfied with these results in our climate and over a large scale. Last winter was the kind that comes along to keep one humble, and produced the larger figure quoted, but as some bees were still deep in drifts in May and had been confined since in October, we could not disparage the method unduly. Others had as high as eighty percent loss.

In most years, too, surviving colonies come through strong in bees, and sufficient increase can be made to cover both winter loss and fall reductions, oftentimes more if desired. Naturally this all means a good deal of honey used, but all outdoor wintering takes honey — just as our homes take fuel to keep them warm. Crops from these colonies rank up with any produced in the locality, which after all is the final test.

If you do pack bees for winter, then do it simply. Cut out all frills, expensive cases, extra and unneeded labor and equipment. They are not required. What is required first of all is bees to pack, well supplied with stores. Then give these bees a chance by a good windbreak and enough packing to soften extremes and slow up rapid drops in temperature and give them opportunity to adjust their cluster.

Expect to be shown some years how little you really know, but in the main your results will satisfy you in that final satisfaction of bees that will produce honey crops at minimum expense and labor.

Death of E. S. Prevost

South Carolina's bee specialist of the Clemson College Extension Service, E. S. Prevost, died September 20 at Anderson Memorial Hospital. He had suffered a stroke in June and had been critically ill since that time.

Thirty-two years ago, when Mr. Prevost first entered the Extension Service, South Carolina beekeeping was largely a matter of the box-hive or log-gum type. Much of the extension specialist's time was taken in conducting demonstrations showing beekeepers how to transfer bees to movable-frame hives. At this work Mr. Prevost was a master, and largely due to his good efforts, beekeeping was put on a more scientific basis, in keeping with the marvelous growth of fruit in the state. In the old days Mr. Prevost used to say that over 90 percent of the bees in South Carolina were in box hives or log gums.

"Ned", as he was familiarly known throughout the state, had a host of friends and his passing will be mourned by all. The memorial that he leaves is the modern beekeeping now found in so large a portion of South Carolina.

Ned Prevost

Growing Alfalfa for Seed in Utah

By H. H. Root

One of the most beautiful and at the same time most interesting publications having to do with legumes is Circular 125 of the Utah Agricultural Experiment Station, issued in cooperation with the U. S. Department of Agriculture. The reproduction of a purple alfalfa blossom on the cover is striking and well worthy of a place in a magazine devoted to art in nature.

Some 40 pages are devoted to general instructions regarding the growing of alfalfa, its care, and protection from natural insect enemies and diseases. All this is a justified effort, for according to the introduction by the authors, over 70 million pounds of cleaned alfalfa seed have been required each year to maintain hay fields and pastures. And if acreage planted to legumes were increased to the extent advisable for soil conservation and a balanced agricultural economy, the annual need for alfalfa seed would increase to the astounding figure of more than 100 million pounds.

As to the availability of these circulars outside of Utah, Dean Walker writes:

We have not made any specific provisions for distribution of this circular outside of the State of Utah, but we have had many requests from all of the surrounding states. I am sure that this bulletin will be out of print before very long, and we may find it necessary to republish it. We thought it might be best not to print a large number at this time owing to new developments occurring in this field and new information we may have concerning insecticides within a year or two.

Following an extensive history of these alfalfa enemies, a timely warning is given of the effect of insecticides on bees:

Many of the insecticides recommended for use in controlling pests today are highly toxic to both honey bees and wild bees. Their use on alfalfa in bloom will frequently result in a high mortality of bees visiting the alfalfa flowers. Because the pollinating activity of these bees is essential to seed production, growers must avoid killing too many bees while controlling injurious insects. Control measures recommended in this circular are designed to minimize losses of bees as well as pests.

No insecticide can be applied to flowering alfalfa without killing some bees. However, when applied during the period bees are not visiting the field (7 p.m. to 7 a.m.), toxaphene has been shown by numerous tests consistently to cause only slight mortality. Fortunately, toxaphene is effective against most of the alfalfa pests that may need to be controlled while the plants are in bloom. It is therefore recommended for use, when necessary, on flowering alfalfa for control of lygus bugs, grasshoppers, and army worms.

Generally speaking, dusts are more destructive to bees than are sprays, and they have a greater tendency to drift.

Based on results of experimental field applications to date the following insecticides are too toxic to bees to be used on flowering alfalfa during day or night: DDT, chlordane, lindane, benzene hexachloride, parathion, aldrin, and dieldrin.

The part of the circular of greatest interest to beekeepers is that on the pollination of alfalfa. We wish it were possible to reproduce the many illustrations and diagrams of flower parts that serve to make cross-pollination so understandable. All this is worthwhile because for so many years, as the authors state, alfalfa was believed to be wholly self fertile and to pollinate itself as do peas and beans. It is reassuring to know that the authors of the study of pollinating insects are G. E. Bohart, G. F. Knowlton, W. P. Nye, and F. E. Todd.

Beekeepers have known the great part that honey bees play in the tripping of alfalfa blossoms but many have not fully understood just what "tripping" means nor why it is essential. The explanation on page 44 by the authors is very clear:

The male and female parts of the alfalfa flower, although enclosed in a sheath (keel) and in intimate contact, are nonfunctional until released. This process of releasing the sexual parts from the keel is known as tripping. Tripping is essential for pod development. About one percent of the non-tripped flowers form pods compared to 50 percent or more of the tripped flowers under field conditions. When tripping does not occur the flowers usually drop. Pollination and fertilization follow tripping. In popular usage both terms convey the same meaning. Pollination is actually the transfer of pollen from the anthers (male part) to the stigma (female part). This defines the part bees play in alfalfa seed production including tripping. Fertilization (subsequent to pollination) is a plant function which defines the part the alfalfa plant plays in so-called pollination.

Since it is so essential that alfalfa must be tripped and cross-pollinated for maximum seed production, reference is made to possible factors such as wind, rain, heat, and humidity. These, however, play but a very insignificant part. Of particular interest to beekeepers is the conclusion by the authors that de-

A pollen-collecting honey bee. The loads of pollen on the hind legs distinguish a pollen collector from a nectar collector.

vices for mechanical tripping, such as harrowing and pulling a wire or chain over the plants, leave much to be desired. The tripping was increased 422 percent but the production of seed was increased only 71 percent. The authors state that a machine, to be satisfactory, would have to cover the field several times during the flowering period, without excessive damage to the plant, and this, they say, appears to be an engineering impossibility.

Tripping and Cross-Pollination by Insects

The following is a condensation of the entire report on this most fascinating subject. We wish it were possible to reproduce the whole discussion and all the diagrams.

At present the methods of pollination previously discussed are of no practical significance in setting a commercial crop of seed. Repeated experiments in which insects have been excluded confirm their importance as agents in the transfer of alfalfa pollen. Replicated plots of alfalfa from which insects were excluded produced 14 pounds of seed per acre in contrast to 198 pounds an acre under natural conditions.

The alfalfa flower is adapted for cross-pollination by insects. When an insect thrusts its head into a flower it releases the sexual column and is thereby struck on the head by a mass of sticky pollen and by the receptive area (stigma) of the female organs. By entering a flower of another plant it receives another load of pollen on the same part of the head and at the same time contributes pollen from its previous load to the stigma.

From the foregoing we can see that the seed grower must depend upon the activities of insects for the tripping and cross-pollination needed for successful seed production.

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With few exceptions bees are the only insects of value as pollinators of alfalfa.

Seed produced when alfalfa was first grown in the West was pollinated almost entirely by various kinds of wild bees existing in the area before honey bees were introduced. Now, however, wild bees have become scarce in most seed fields and honey bees, introduced and maintained for honey production, have to a large extent replaced them as pollinators of alfalfa.

.....However, intensive studies in the past few years have shown that in Utah and California, honey bees, in spite of their rather low efficiency as individuals, are performing most of the pollination of the commercial seed acreage.

An ample supply of either wild bees or honey bees, or both, is valuable to the seed grower not only to cross-pollinate a high percentage of the blossoms on his field but also to do it rapidly. Rapid pollination shortens the period of flowering and hastens maturity, thus reducing the time during which damage from insects is likely to occur and, in the case of second-crop seed, minimizing danger of frost damage. Generally speaking, when an alfalfa field holds a profuse "flower garden" bloom, it is a sign that tripping is inadequate. Conversely, a field in which the flowers are rapidly tripped develops a brownish cast imparted by the wilted flowers and developing pods.

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Most honey bees visiting alfalfa seed fields in Utah belong to hives owned by beekeepers and thus their distribution on a broad scale is controlled by the judgment of the beekeeper. This judgment is influenced by many factors but the primary consideration is usually the possibility of an economic honey crop from

the blossoms in the area. Other considerations such as remuneration for pollination services may become more important in the future.

The 20,000 to 25,000 bees in the field force of an average colony seldom range more than one and one-half miles unless pressed by lack of food. Their distribution within this range is governed primarily by the most attractive areas of bloom and secondarily by distance from the hives. Alfalfa bloom is attractive to honey bees but the number of bees actually visiting it is governed by the number and proximity of hives and competition from other attractive sources of pollen and nectar in the area.

. . . . .

Alfalfa under most conditions is an attractive source of nectar and suffers little from competition with other plants for visits from nectar collectors. It is not an attractive source of pollen, however, and pollen collectors are apt to neglect it in favor of better sources. Consequently, in alfalfa fields nectar collectors nearly always outnumber pollen collectors in some areas by more than 100 to 1.

. . . . .

When collecting pollen from alfalfa, honey bees trip the majority of the flowers they visit and compare favorably in efficiency with many wild bees. Nectar collectors, on the other hand, usually are able to procure nectar without tripping the flowers.

. . . . .

Honey bees were largely discounted as pollinators because of the slow tripping rate of nectar collectors and their preponderance on most fields. The collection of alfalfa pollen in considerable quantities in pollen traps in certain areas was conclusive evidence of the value of pollen collectors. However, tripping by nectar collectors, even if at a slow rate, is important. Bees tripping 1.5 percent of the flowers they visit will trip about one flower every ten minutes. An average of two nectar-collecting bees per square yard tripping at this rate over a three-weeks' period would set about 70 pounds of seed per acre. As many as four or five bees per square yard have been found on alfalfa with abundant bloom. An increase in the tripping rate or in the number of bees on the field would result in better setting.

Two experiments recently conducted in Utah have made it possible to evaluate the honey bee as an alfalfa pollinator and to predict that increased yields are likely to result from increasing their numbers. In 1948 on replicated plots at Newton, populations of bees were regulated by the use of large cages in the field. Some plots were open and on others cages were used to exclude bees or to confine them in large numbers. In 1949 near Logan open plots were compared with ones on which bees were confined. . . . . Only 14 pounds of seed per acre were produced when bees were excluded. Increasing the supply of pollinators over the number present in the vicinity on plots in which lygus bugs were controlled resulted in seed increases of 62 percent in 1948 and 53 percent in 1949. The higher yields of 1949 seemed to be associated with the higher bee populations although other factors probably also played a part. These experiments show clearly that although moderate yields of seed may result where no special provision is made for pollination, the naturally-occurring supply of pollinators is usually inadequate for high production and more seed should result from increasing the number of honey bees.

This influence of migratory bees on alfalfa seed yields indicates that Utah can use many more bees. In fact, the data suggests that for each additional 1,000 colonies the state may expect an increase of about five pounds per acre, or about 250,000 pounds on the basis of the 53,000 acres planted to seed in 1949.

For adequate pollination seed fields should have at least four or five honey bees per square yard during the flowering season. Depending upon the abundance of other attractive plants within range, this may require from one to five or more colonies per acre of alfalfa. Concentrations greater than the honey crop will support can be provided by beekeepers if the seed grower is willing to pay for pollination service.

Obviously no hard and fast number of colonies per acre can be recommended. The number of native bees normally on the field and the relative numbers of pollen- and nectar-collecting honey bees influence the number of co'onies needed. So, too, does the amount of competing bloom. If wild bees are scarce and pollen collecting by honey bees is low in a district, the field will probably need as many honey bees as its bloom can possibly attract. If there is much completing bloom in the area, as many as five colonies per acre could doubtless be used to advantage. There is some evidence from studies in California that increasing the number of colonies from two or three to five or six per acre does not always increase the total number of bees on the field but is likely to increase the number of young adult bees, which are the more frequent trippers when collecting nectar.

Research workers in California recommend a minimum of two colonies per acre for production of 250 to 500 pound seed crops and an additional colony for each additional 100 pounds. The upper limits were not determined but, using six colonies, they report yields of 1000 pounds or more. . . . . This placement in the field presumably takes full advantage of the higher tripping rate of the young bees which do not fly far from the hive.

Most seed growers in Utah are largely dependent on the beekeeping industry for their supply of pollinators. In order to increase the supply, which is generally short, steps should be taken to encourage beekeeping in the state.

. . . . . It is estimated that production of at least 80 pounds of surplus honey per colony is necessary for a full-time beekeeper to pay expenses and make the equivalent of wages for skilled labor. Many factors influence this production. The application of insecticides may either kill a colony outright or so reduce the field force that little or no honey will be stored. . . . . The "carrying capacity" of alfalfa for honey production is variously estimated at from one to two colonies per acre. Adverse conditions for bee flight and poor nectar production by the flowers may reduce this capacity drastically.

Three basic steps can be taken by the seed growers to encourage beekeeping in this area and thus increase the supply of pollinators. (1) They can provide good apiary locations close to or in their fields.

(Continued on page 708)

Honey Flow Forecasting

J. R. Crawford, Victoria, Australia

Progress in investigations relating to honey flow forecasting has been made since I last wrote of it, although not so rapidly as may have been anticipated. The principal reason for this is that nature is rarely consistent and weather variations have a great influence on chemical action in plants.

The iodine test for the presence of starch in the sapwood of eucalypts in which a shaving is placed in an iodine solution, giving a blue stain reaction, depending on the starch content, actually does give an exact result. If starch is present in the sap of the tree, the blue stain will show, and in a density relating to the starch concentration.

However, here is the catch. A good honey tree, such as the yellow or grey box or red gum, may show a very optimistic stain, indicating the possibility of a good flow in the next season and in many cases the flow often starts well. This has happened time after time with the red gum in our locality when a wet day or perhaps a sudden shower will stop the flow.

Should the inclement weather continue, with rain, the blossoms may fall. Then the tree usually makes crown growth.

This occurrence hits migrating apiarists badly as the opening of the flow will point to a promising season. Wind, however, does not have the same effect. Some years ago, during a red gum flow, the weather was so windy that bees had a job traveling either to the blossom or back from it. Tins went flying and dust was in everything, but the old gums put on such a flow as has not been seen since.

The flowering cycle of various species of eucalypt gives scope for further investigation. Such trees as the sugar gum will bloom year after year, carrying embryonic buds as well as blossoms. This tree is no spectacular yielder, but in plains country where the sugar gum is grown in large plantations for windbreaks, good yields have been reported. Other good honey trees, such as red, grey, yellow and white box, red gum, iron barks, and a multitude of others flower at intervals varying from two to four years. Others flower sparsely every year or so and blossom well perhaps every sixth year. There are a lot of manna gums in our district with a six-year cycle. These trees, by the way, derive the name from the manna, or sugary flakes, found under the trees in the summer. Boring by locusts allows sap to drip to the ground which on evaporation forms white flakes which are very sweet. This phenomenon would obviously point to a prospective flow for the apiarist.

In relation to the flowering cycles it is a mathematical certainty that every dozen years or so the forest will be a mass of bloom because of the coincidence of the cycles. Such happened in the eastern part of Australia in the last year or so, and resulted in a bumper crop, and naturally one can expect the same over a regular period, weather permitting.

The trend of apiary economics in Australia is somewhat similar to that of U.S.A. Apiarists here are feeling the pinch despite the heavy yields, which often are achieved by long migrations. Judging by reports, U. S. difficulties in honey production arise from fluctuations in price, underselling, etc., as well as from rising cost of production. In contrast, Australian honey prices have remained constant since 1945. However, as may well be imagined, such items as 60-pound tins have trebled their prices, and most other apiary goods are double or more in price.

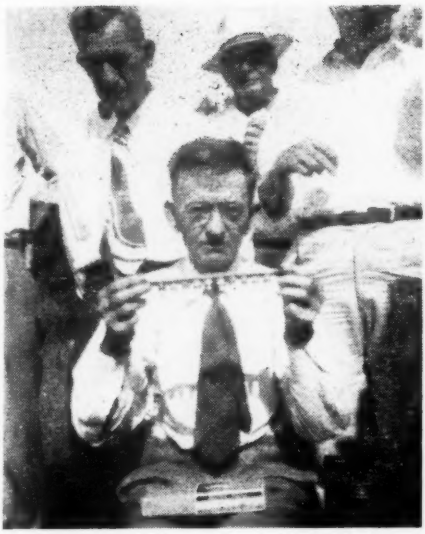
Where long migrations are the order of the day, apiarists find that an increase of production means bigger loss, so that the tendency seems to be to pick a good all-around site and settle there.

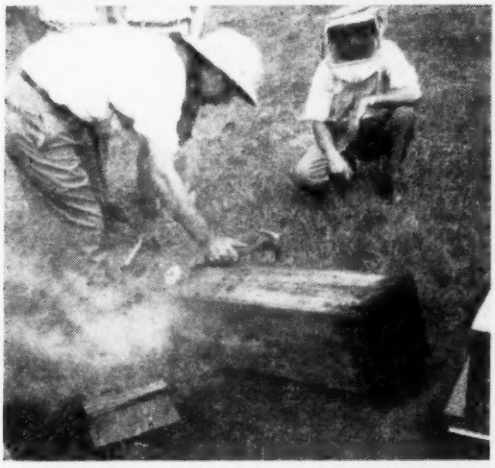
Very recent news over the air has been that the Federal Government has agreed to assist apiarists' publicity schemes and doubtless the Australian Honey Institute to the extent of £10,000 or about $25,000. When one considers that the average Australian honey consumption per person is only two and one-half

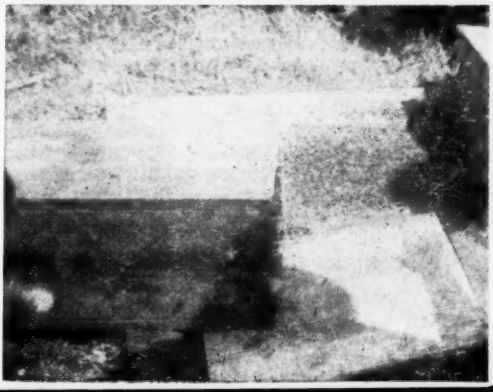
(Continued on page 707)

North and South Carolina Beekeepers' Meetings held in August, 1950.

The North and South Carolina beekeepers met at Wildwood Farm, Brevard, on August 18, 1950. Talks and demonstrations were closely followed.







Top left: A queen breeder showed some queen cells.

Top right: T. P. Gaskin, S. C., and W. H. Purser, State Apiarist of S. C.

Below left: Dr. David Dunavan, Clemson, S. C., and W. A. Stephen, Extension man, Raleigh, N. C.

Right: Drumming bees from box hive shown in the upper picture into new hive.

An Evaluation of the Work of Dr. E. F. Phillips

By E. R. Root

Dr. E. F. Phillips and E. R. Root in their last interview at Medina. The photo was taken on the front porch of E. R. Root's home.

Dr. E. F. Phillips is quoted more than any other man in scientific research on the subject of beekeeping. Some four years ago he retired in order to take life a little easier. The life work of such a man should not drop at this point. We can well afford to take a retrospect and I, a contemporary, have assumed the job of telling of his work.

Dr. Phillips, like Robinson Crusoe, needed a man Friday, and to make a long story short, he selected the late George S. Demuth. Of Demuth he said that he was the best practical beekeeper in America, and one with a scientific approach. Not a better man could have been found. The two worked together for several years with the result that a new epoch in bee culture was born. The work of these two men was outstanding. Perhaps there is not a parallel in all the annals of bee culture which covers a wider scope in scientific and practical beekeeping, unless it is the work of Francis Huber, the Swiss naturalist. Later on, George Demuth became editor of Gleanings in Bee Culture and continued as such until the time of his death in 1934.

While I was at Oberlin College I occasionally wrote articles for Gleanings. Later, when my father's health began to fail, he asked me to take over the editorial work. I found many problems unsolved and was looking for some young man who could become familiar with some of these problems and who had back of him some scientific training.

In 1903 I received a letter from Dr. E. G. Conklin, Professor of Zoology at the University of Pennsylvania, which read as follows:

> Permit me to recommend to your favor Mr. E. F. Phillips, one of my graduate students, and the holder of our Fellowship in Biology for the coming year. Mr. Phillips has undertaken at my suggestion, to go over the whole subject of parthenogenesis in the honey bee in the light of new theories and observations, eliminating, if possible, certain sources of error which are found in the works of older students of this subject and considering many features of the problem from new points of view. Mr. Phillips is a clear-headed, well-trained man, and I consider it highly probable that his work will yield valuable results. He proposes to offer this work, if it should result favorably, as his Ph. D. thesis, in which case it will be published in full.

Here was just the man, and after some correspondence Mr. Phillips came to Medina, and history has proved that he, then only 25, with George Demuth, was the man who

played no small part in a new epoch in bee culture.

During the summer of 1903 when Dr. Phillips had obtained permission to spend some months at Medina, his interest was chiefly in parthenogenetic development of drone bees, the fate of eggs laid by drone-laying queens and, in continuing his work begun in 1902, on the compound eye of the honey bee. He was also interested in methods of queen rearing, having spent the previous summer with E. L. Pratt, known as "Swarthmore".

Dr. Phillips obtained the degree of Doctor of Philosophy from the University of Pennsylvania in June, 1904, and remained there the next year as Research Fellow. He was elected to the Research Fellowship for the second year, starting in September, 1905, but he resigned this to enter the service in the Bureau of Entomology, receiving a temporary appointment when Frank Benton left for his round-the-world trip, hunting for races of bees. He was designated "Acting in Charge, Apicultural Investigation", which post he occupied until 1907, at which time he was put in charge of that work.

The Bee Culture Laboratory at Washington was expanded by the employment of G. F. White, Arthur H. McCray, Burton N. Gates, R. E. Snodgrass, A. P. Sturtevant, and later by a number of others. Intensive work on causes of bee diseases was begun in 1906, and throughout the progress of this, Dr. Phillips worked on methods of control. He was the first to make a distinction between AFB and EFB, the former a virulent disease, the latter a milder disease. He devised the present plans of control of European foulbrood, and because of these the disease is now inconsequential.

Dr. Phillips about the time he first came to Medina.

George S. Demuth, already referred to, entered the Federal Service in 1911 and remained until 1922. Shortly after his appointment, plans were instituted for the two to work together on the wintering problem. After many attempts to devise a suitable program of work in an effort to solve the practical wintering problem, it was concluded that such work was premature and that the proper way to attack the problem was to learn how bees behave in the broodless period. This was done in part by studying the temperatures of the winter cluster in relation to temperatures in the hive and outside the cluster, and outside the hive. A total of over a half-million temperature readings were made the first winter. It was soon evident that there is an intimate inverse relationship between cluster temperatures and the temperature of the air just outside the cluster. From that, after innumerable tests it was found that it was a simple matter to retain the winter cluster at a fairly low temperature merely by insulating the hive properly. Since high cluster temperatures wear out the bees quickly and lead to the development of **Nosema apis**, Dr. Phillips concluded that "the solution of the practical problem of wintering rests largely on the use of suitable insulation—top, bottom, and sides". Tests were made of all manner of insulations, and it was found that these were immaterial, just so all parts of the hive are protected.

At no time did Dr. Phillips or Demuth advocate any special material for insulation or any particular way of applying it, but since, in one of their publications they pictured a quadruple case, many erroneously jumped to the conclusion that they favored it above all others, although in that same publication they said they did not.

During the First World War the Bee Culture Laboratory was entirely changed over to war activities.

Extension work in beekeeping was then started. Other offices were induced to take on plans for beekeeping, such as the semi-monthly market news service, work in home economics for the use of honey, special reports on the status of beekeeping annually, color grading of honey, etc.

During that war the commercial production of extracted honey was greatly increased and comb honey declined. Later, Demuth estimated the increase in commercial honey production in that period as 400 percent. Later the first work on cooperative marketing of honey was undertaken by the Department, at the instigation of the office. There were numerous instances in that period when supply dealers and honey dealers were given special privileges because their needs were made known in the right places. During the war period and just afterward the number of men employed was tripled, but the extension work was shifted to the several states shortly after the close of the war.

In 1924 Dr. Phillips resigned from Federal Service and accepted a professorship at Cornell University. He retired from this post on June 30, 1946. Graduate students working there in this period have since occupied positions in several states, several provinces of Canada, India, China, Ecuador, the Soviet Union, Czechoslovakia, the Union of South Africa, and Mexico.

In 1924 Dr. Phillips began work in building up a beekeeping library at Cornell University for use in the graduate work and otherwise. This grew steadily, and by 1946 it was second to none. Since 1946 a major share of the time has been spent in accumulating still more material for the library. In June, 1946, at the time of retirement, the trustees of Cornell University named the beekeeping library the "Everett Franklin Phillips Beekeeping Library", and at that time arrangements were completed to provide a permanent endowment fund of $10,000, the income of which can be used only for the purchase of books and other published material for the library. The library now surpasses all others in size, this being especially true since the great Drory Beekeeping Library in Berlin was destroyed during the war. In obtaining additional material for this library it has been possible also to assist libraries in other institutions by exchanging duplicate material, so that all the beekeeping libraries are now more extensive than at any previous time. Exchanges have been made with associations and institutions in the Soviet Union, Germany, Czechoslovakia, Hungary, Italy, France, Switzerland, the British Isles, India, China, Australia, and elsewhere.

As George S. Demuth looked at the time he came to Medina.

Dr. Phillips received an honorary degree of Doctor of Science from Allegheny College in 1929. He has also medals of five foreign associations of beekeepers, including that of the Apis Club, of which he was President in 1924.

Dr. Phillips' book "Beekeeping" was published by the Macmillan Company in 1915. He revised it in 1928. He is the author of numerous bulletins, scientific articles in various journals, and technical articles in beekeeping journals, to a total of roughly 700 titles.

Which Hive Did Swarm?

[From The Norway Bee Magazine Birohteren (The Apiarist)]

It may often be difficult to tell, especially in an apiary with many hives, and many would like to know where the swarm came from.

Old Markus Lier in Faaberg told me some time ago how he managed it. He took a handful of bees from the swarm and sprinkled them well with flour before he threw them in the air in front of the hives. It was then easy to see which hive they entered and thus also from which hive the swarm had come.—Sent by Capt. Th. Thommessen, Horten, Norway.

It's Time To —

By Mrs. Benj. Nielsen
Aurora, Nebraska

Scrumptious honey flake kuchen.—Photo courtesy Kellogg Co.

Now is the time to whip up a honey pumpkin pie, a batch of honeyway coconut cookies, a light, tender honey flake kuchen, bake some honey fruit-stuffed apples—in fact, all of those appetite-satisfying goodies that stick to the ribs and furnish abundant energy for crisp, chilling wintry days.

If you are new at this fascinating game of honey cookery and would like to convert a few of your favorite old standby recipes, here are a few easy-to-follow rules to insure happy results. In substituting honey for sugars, reduce the liquid approximately one-fourth and cook at a lower temperature, as honey has a tendency to scorch rather easily. When combining honey with mixtures including chocolate and dried fruits it is not necessary to reduce liquid content as those ingredients tend to absorb—so substitute cup for cup. Generally speaking, honey is about 25 percent sweeter than sugar, so you may find you wish to use less of this golden sweet. Baked goods will not seem as sweet as sugar-way ones when sampled freshly baked. However, age intensifies both sweetness and flavor, keeping honey pastries delightfully fresh tasting. Happy experimenting to you!

Honey Pumpkin Chiffon Pie

Three egg yolks, ½ cup honey, 1¼ cups canned or cooked pumpkin, ½ cup milk, ½ teaspoon salt, ½ teaspoon ginger, ½ teaspoon cinnamon, ½ teaspoon nutmeg, 1 tablespoon unflavored gelatine, ¼ cup cold water, ⅓ cup honey, 3 stiffly-beaten egg whites, and 1 9-inch baked shell.

Beat egg yolks until very thick, then beat honey in gradually; add pumpkin, milk, salt, and spices; cook in double boiler until thick. Add gelatine, softened in cold water; mix thoroughly. Beat egg whites until stiff, then add honey gradually. Fold into cooled pumpkin mixture. Pour into baked shell and chill thoroughly. If desired, top with honey-sweetened whipped cream.

Honey Flake Kuchen

Three-fourths cup sifted flour, 2½ teaspoons baking powder, ¼ teaspoon salt, ½ cup milk, ¼ cup honey, 1 egg, well beaten, 3 tablespoons melted shortening, and 1½ cups whole wheat flakes.

Topping

One-half cup brown sugar, ½ teaspoon cinnamon, ½ teaspoon nutmeg, 2 tablespoons melted butter, and ½ cup whole wheat flakes.

Sift together flour, baking powder, and salt. Combine milk, honey, and egg. Add to flour mixture with shortening, stirring only until liquid and dry ingredients are combined. Fold in wheat flakes. Spread in greased 8-inch baking pan.

Mix together brown sugar, spices, butter, and wheat flakes. Sprinkle over batter. Bake in moderately hot oven, 400 degrees F., about 25 minutes. Yield: 9 2½-inch squares.

Honey Chocolate Oatmeal Cookies

Two and one-half cups sifted flour, 1 teaspoon baking powder, ¼ teaspoon soda, 1 teaspoon cinnamon, ½ teaspoon salt, 1½ cups quick rolled oats, 1 cup shortening, 1¼ cups honey, 2 eggs, 2 squares chocolate, 1 teaspoon vanilla, and 1 cup chopped walnuts.

Sift flour, measure; add baking powder, soda, cinnamon, and salt, and sift again. Melt chocolate. Cream shortening and honey, add eggs, and continue beating. Add vanilla, melted chocolate, and oatmeal. Add sifted dry ingredients and nuts. Drop by teaspoonfuls on greased cookie sheet, bake in moderate oven, 350 degrees F., for 12 to 15 minutes. Remove from cookie sheet while warm. Yield: about 6 dozen.

XUM

Queer Customs and Superstitions Relating to Beekeeping

By George H. Latham, Wilmington, Delaware

Beekeeping is an ancient occupation. In Baden, Germany, a fossilized bee has been found which is indistinguishable from bees of today. It gathered honey long before there were any men on Earth. The first men found honey good to eat, and as they became civilized began to domesticate the bees. Thus arose the first beekeepers.

The Babylonians, Assyrians, ancient Greeks and Romans, Egyptians, and Israelites of Bible times all kept bees. The Bible story of John the Baptist eating locusts and wild honey infers that there were "tame" bees in Palestine, and in II Chronicles 31 it is said that in the reign of King Hezekiah the people brought in tithes of the first fruits of the land, among them honey. Pliny tells of migratory beekeeping along the River Po about the time Christ was teaching in Palestine. Homer frequently alludes to bees and honey in his immortal epics. And Aristotle and Virgil were beekeepers.

Does migratory beekeeping 1900 years ago surprise you? Well, beekeepers of 3000 years ago had their bee laws, too. In the Archives of the Hittite kings, in 1300 B. C., penalties are prescribed for stealing hives. The Jewish Talmud restricts the keeping of bees near villages, and provides that a beekeeper can cut a bough with a swarm of bees on it. And in taking honey, the two outside combs must be left for the bees. The laws of Solon (600 B. C.) forbade the keeping of bees nearer than 300 feet from a neighbor's bees.

In the ancient world honey and wax were important trade commodities. The most famous of all honey came—and still comes—from the lower slopes of Mount Hymettus near Athens. The bees gather it from thyme. The famed honey of Norbonne, France, is white, granular, and highly aromatic. It comes from labiate plants such as rosemary. Heather honey from the British Isles is golden yellow. The fine aroma of Maltese honey comes from orange blossoms. Not all the famous honey of antiquity is good, though. For example, the honey from certain areas around the Black Sea has been mentioned several times in history as poisonous, notably by Xenophon and by news correspondents during the Russo-Turkist War of 1877.

Since sugar was unknown in ancient times, honey was a highly prized food and delicacy. Pythagoras attributed his great age to the use of honey, and his followers were said to have had bread and honey as their chief diet. Democritus also ascribed his longevity to the use of honey and liked it so well he was finally buried in it. So was Alexander the Great, who commanded on his deathbed that this be his mode of burial. Mohammed named one of the books of The Koran "The Bee", and prescribed honey for illness. Belief in the therapeutic value of honey persists even today. The longevity of the Balkan people is frequently attributed to their constant use of honey. Probably the idea that bee stings are beneficial for rheumatism is closely related to belief in the medicinal value of honey.

The ancient Persians believed that mummies had great healing powers. The supply of mummies being inadequate, an old Persian manuscript describes this method of making them: "Find a ruddy, red-haired man and feed him until he is 30 years old on fruit; then drown him in a stone vessel which is filled with honey and drugs, and seal up the vessel. When it is opened after the lapse of 150 years the honey will have turned the body into a mummy."

Ancient peoples believed that bees were sacred and endowed with occult powers. Aristotle, Virgil, and Pliny thought that bees could predict rain, and certain Hindu myths were that bees could impart the gift of song and eloquence to man. A curious book on animals written in 1373 says that "honey flies" are the only ones that go to heaven. In-

cidentally, the Arabian author puts in a plug for comb honey—he says honey is best in the comb.

There is an old European fable which says that when God made bees, they demanded to be put into a silver hive and that their sting be fatal. God was wroth and said to them, "You shall inhabit hives of straw — and every bee that stings shall die." The Russian version is philosophically succint. The bee asked that man should die of her sting. God replied, "Who, then will keep you?"

Since earliest times there has been a persistent myth that bees can be reproduced from the flesh of decaying animals (the myth of the Ox-born bees). Ovid gives detailed directions for accomplishing the transformation. Old Ben Johnson and Samuel Butler believed in this myth, and in a book on bees in 1655 a Samuel Hartlib even referred to a farmer of Cornwall who practiced this method of creating bees!

Honey was and still is used in rituals, especially in Europe. Among the Germans, smearing a baby's lips with honey was a safeguard against anyone's taking its life. In early Christian times honey was often used after baptism. And in many parts of Europe it is still customary to use honey in marriage ceremonies in such ways as touching the bride's lips with it, or making a cross on the door of the new home to bring good luck or ward off evil. In some parts of Europe the mother of the groom always meets the bride at the door of her new home and offers her a vessel filled with honey.

There are, moreover, many superstitions and customs regarding the practice of beekeeping itself. Perhaps the most familiar of these is the idea that beating on pans, the ringing of bells, throwing dirt into the air, and other kindred activities will make a swarm settle—a custom that still prevails in some isolated communities. Among the ancients, another way to keep bees at home was to rub a mixture of hot water and wine on the hives, or to fumigate them with burnt asses' dung. In the upper Palatinate 'tis said that if a swarm ignores the noise of beaten pans or sickles, it can be made to settle by turning the bread around on the table in the house. Bees can be made to prosper by placing the liver of a white falcon, or the eye of a bear, in the hive. Moths will stay out of hives sprinkled with fresh milk and the urine of children. Pliny recommends dry cow dung as the best fuel for smoking bees. As far back as 1655 beekeepers were giving thought to the question of large versus small hives, for a Dr. Boates in a book on beekeeping remarked on the willingness of bees to work in hogsheads, despite contemporary advice not to make the hives too large "lest the bees be discouraged out of despair to fill them".

In France it is considered unlucky to count your hives, and some beekeepers guard against the temptation by arranging them so they are difficult to count. In England it is considered unlucky to buy bees, but they may be acquired without risk by barter. And bees, 'tis said, will not thrive in a quarrelsome family. In parts of New England it is said, even today, that bees won't attack you if you hold your breath while you are near them. Try **that** sometime when you are working with your bees!

One superstition, or maybe it was an occult art because it may have some foundation in fact, is that certain people have the power to make bees obey them. Assyrian beekeepers were said to know how to call bees out of their hives and drive them in again. Cyril the Patriarch of Alexandria said he had seen this feat with his own eyes. It is said that an Englishman, Daniel Wildman, who had traveled extensively in the East, could tame bees and send swarms wherever he wished. He exhibited his art throughout Europe. Here, beekeepers, is a mysterious gift which did we but know it, would be oh, so helpful to us!

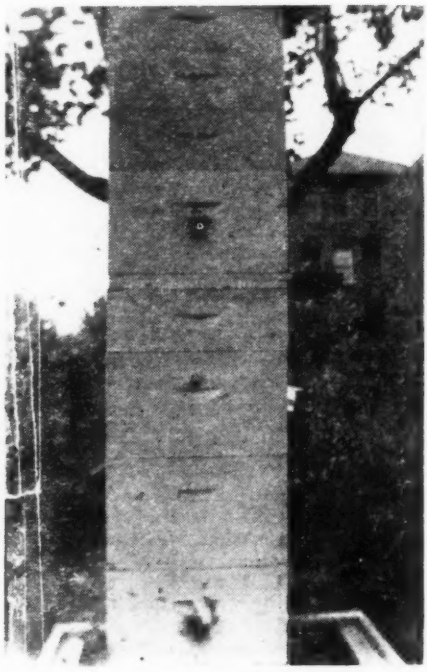
There is another old superstition which I must not neglect to mention. That is "telling the bees" when someone has died. In China, bee hives are turned around when their owner dies. In parts of Germany, England, and America it is believed to this day that if bees are not told of their master's death they will fly up to heaven and seek him and thus be lost. Sometimes the hives are draped with black. The New England poet Whittier alludes to this custom in his sentimental poem, "Telling the Bees".

(Continued on page 711)

Success with Two-Queen Colonies

By S. M. A.

This is one of the two-queen colony hives. On this one I did not give them an entrance in a different direction, just nailed strips about an inch square on an excluder leaving the front end open and attaching an extension for an alighting board. They have not interfered with each other and have been perfectly contented.



This is the other two-queen colony with a side entrance and an auger hole in the front. The entrance is used only for fanning and the returning worker bees enter of their own volition by way of the auger hole. I wondered how it would work but there was no difficulty with either hive. This hive gave 200 pounds of honey and the other also. They are now refilling the extracted supers.

Two-queen colonies have proved to be a big success here this year. The accompanying pictures show the two hives that gave 200 pounds each, besides filling two food chambers and the brood chambers. They worked well and did not interfere with one another. The openings, I found, can be the same way. One with the side entrance did not appeal to the workers so they kept to the auger hole and merely used the side opening as a place to do their fanning. They are back at work now refilling the extracted supers. They were stunned at my audacity in robbing them of their stores but when they recovered from the shock they had just one ambition—to replace what had been stolen. They did have a few temptations to retaliate but as these cross-patches died off friendliness reigned again. I had only one difficulty and that was that they refused to use the bee escape so I had to brush them off and that is probably the cause of their being cross.

The opinions of the writers in Gleanings in Bee Culture are their own and not necessarily the opinions of the editors.

Second Glances

By C. M. Isaacson

A condensed ABC of bee life is contained in the article beginning on page 593, while the many pictures included give, with their headings, a brief look at beekeeping and the production of honey. We need articles like this from time to time —not only for beginners but to refresh the knowledge of the more experienced. And keep in mind that statement: "a good beekeeper is usually a good student". He has to be. One mention also of another point—that of heating the honey to 160 degrees F. in the improvised double boiler. I hope it is also cooled rapidly after the heating—the 160 degrees is too hot for safety otherwise, especially if one is treating a light-colored honey. I have always believed, anyway, that the less honey is heated the better for the flavor.

Actual contact with beekeeping equipment and bees through laboratory and field work would seem to be essential in any elementary course in beekeeping — both from the student's viewpoint and from a practical outlook. It is a reasonably dependable axiom that theory needs practice —book study is made more profitable by application. The combinations should be of real value (page 598).

The keen interest awakened by bees can be a source of trouble at times, it seems (page 600). The convent Superior's wrath at the neglect of the garden brought a smile, for I well know that bees have their own undeniable fascination. Many a time in my first beekeeping days I would be late for a meal (my wife maintains I still am not perfect in this respect!). They make one forget other things.

Upper entrances for winter are rapidly becoming accepted as essential — especially in northern locations. This, and the full hive body of honey for each colony, goes a long way toward insuring that the Stephenson bees come through the Iowa winters all right (page 602). But with hives in long rows and all entrances similarly located, is there not considerable drifting and consequent variation in colony strength? Also, in localities where roads soften in the spring, the task of hauling all bees out to outyards would be a difficult one.

Plants being "scared to death" is rather an unusual way of stating a case, but the underlying principle is true (page 604). Here in a northern climate I have noticed similarly that after an unusually hard winter most things yield bountifully in comparison. This summer this was especially noticeable with wild fruits, but it was the case, more or less, with nearly every plant or tree. Hardship is a productive factor in all life. Of course, though, there is also much to be said for Gordon Bell's contention that soil depletion influences nectar yields. Mr. Burr's mention of sage as an example for his case is not well put—nothing was removed from the land as in the case of a heavily farmed region.

A rather clever let-alone system was that of Dr. McKee's father (page 606). That extra box might be called an "overcoat" type of super. But the main thing is that it worked. All thinking beekeepers will agree with Dr. McKee as to the side of beekeeping beyond that of mere profit. It has a large influence.

Allowing honey foods to age is a good practice—if one can do it—says Mrs. Nielsen. She contends that her family makes it impossible. I sympathize with her—or do I? It really isn't her family's fault if the honey cookery is that good. It really is eatable. I know from experience (page 608).

Granulated comb honey is not unsalable, says H. H. Root. Too many of us have accepted it as such without asking why—or trying it as Mr. Root did through his "accident". If it is just as good in taste, and certainly not as messy—why, let's tell people and not apologize if granulation has begun in combs we wish to sell (page 611).

Yes, beekeeping is gambling, like nearly all else we do in living our lives. But as the Editor says in his Talks to Beekeepers, the element of chance can be reduced very much if we supply the basic needs of each colony. And remember that though both optimism or pessimism are normal under varying conditions, neither contains the whole truth (page 612).

From the Field of Experience

Four Sticks

By Milton Stricker, Annandale, New Jersey

Fig. 1

Only four strips of wood, but it is getting the New Jersey beekeeper closer to 100 percent wintering than ever.

Ordinary cedar shingles are ripped lengthwise in one-inch strips. It will take two of these one-inch strips for each colony.

For a ten-frame hive you will need a strip of one-half-inch material, three inches wide and sixteen and one-quarter inches long. This forms the porch. The length of this piece will depend upon the size hive favored by the beekeeper.

The fourth stick is a piece of one-half by one-half inch stock about thirteen inches long to be used as an entrance reducer upon the upper side of the porch (Fig. 1).

The porch piece is nailed to the two strips so that their feather edges, one at the back of the colony and the porch, fits snugly against the front of the hive. The entrance reducer is fitted in place and the whole apparatus is placed upon the top of the colony (Fig. 2).

The inner cover is placed in position, and it will be noticed that the taper of the shingle strips allows for a snug fit of the inner cover on all sides except in the front where

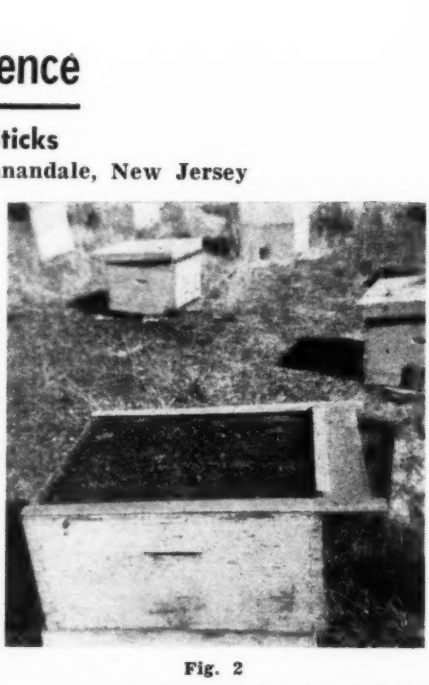


Fig. 2

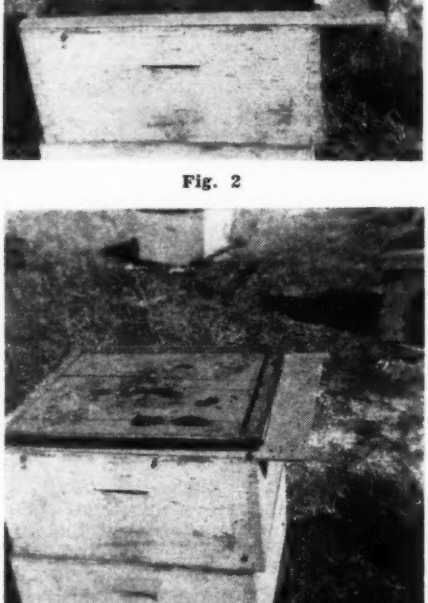


Fig. 3

the entrance reducer gives an opening of about one inch by one-half (see Fig. 3).

The cover is placed over the whole and secured with two inch hoop staples or nails driven through the sides of the cover or perhaps by that old standby, the stone.

The lower entrance should be reduced as usual to keep mice out and allow a small entrance for the bees to use if they wish, but after the

porch is put on, the colony will take most of its winter flights from here.

This arrangement, which is commonly called the "Johnson Porch" after George Johnson of Pemberton, New Jersey, is popular in North Jersey where the moist air is expelled through the top hole before it can condense and freeze within the colony, and as an auxiliary flight hole when the lower entrance is often frozen shut.

In South Jersey it has been found that a colony with such an arrangement to expell the moisture-laden air will have more blood and bigger spring buildup than one without.

Mr. Johnson, who has used this porch for many years, likes it better than the usual hole bored in the hive body, since it is on the very top and much more efficient than a hole which must be drilled much lower.

It is only four sticks, but it sure helped the New Jersey beekeeper.

Community Bottling Plants

In Minnesota, where we attended a summer beekeepers' meeting at Detroit Lakes recently, a number of beekeepers expressed a desire for a community bottling plant, the idea being that a central honey-packing plant with up-to-date facilities for processing honey could be used to an advantage by commercial producers in that area. Obviously, this would involve a number of factors which might be overlooked at the outset of such a project.

Whether the individual beekeepers would have their honey processed separately or have a record of the amount and grade of honey turned in, to be mixed with honey from other producers in the locality, would have to be worked out in some detail.

In any event there is a feeling that a community packing plant would in the end save considerable labor and expense, and furthermore, the work done with up-to-date equipment would result in a better product than individual beekeepers could turn out with their limited equipment.

We shall await with interest the outcome of the proposed project.

Bee Intelligence

By Allen Latham

If Methuselah began beekeeping in childhood I doubt if he would know all about bees when he reached 900.

This morning I happened to glance at a peculiar action on the part of a worker. There were a score or so of worker bees close together at the entrance and one of them was trying her level best to fly away with something. Looking closely I saw that she had hold of a perfectly healthy sister. She tried vigorously to fly away with her sister but finally gave up the task.

I have many times seen bees trying to fly away with crippled or nearly dead bees but never before had I seen one trying to fly away with a healthy bee.

Norwichtown, Conn.

Smoking Entrance to Find Queen

By T. H. Harvey

We had occasion to weed out two old queens today so that the colonies may be requeened. We tried for the first time the method described by W. H. Purser in his article "Requeening" in the August 1950 issue of Gleanings. The method was described under the caption "How": "Puffing smoke into the entrance and all the way under the frames will drive the queen out on top of the frames where she can be picked off readily". Our two tries were such a success and accomplished with such little effort that we feel obligated to take this means of thanking Mr. Purser for the fine article on requeening. Proof that we have much to learn.

Clear, Fork, West Virginia

"How Far Can You Throw a Dollar?"

By Lewis W. Parks

Chairman, Board of Directors, American Honey Institute

In a recent issue of a monthly magazine there appeared an article entitled "How Far Can You Throw a Dollar?" The idea of course was how far can you make your dollar stretch when faced with tremendous expenses but fairly little income.

It would be interesting if every beekeeper could apply this measuring stick to his own efforts of promoting honey. How far can he throw his money? How much can he get for what he spends? How effective are the results as compared with the effort and the expense put into obtaining them?

Most beekeepers would look with horror on a statistical graph showing the actual pull on the **total** honey market that one man's promotional work can exert. It would be almost nil. One man in this tremendous country of ours is as a drop in the bucket. Regardless of how energetic he is, how ambitious he is, how much talent he has, the work he does (with the exception of that done in his own community) will amount only to a drop in the huge bucket of honey promotion.

But now comes the miracle. The same amount of money spent by the individual beekeeper can go ten times as far toward effective honey promotion if it is in the hands of the **American Honey Institute**. You know that the **Institute** works on a national scale: thus it is sometimes hard to actually "see" the results it is getting. But nevertheless the results are there, and in sufficient quantity to attract the compliments and admiration of food concerns that do business with a much larger bank book.

This is not to underestimate the deep-rooted value of local advertising and promotion by the beekeeper—far from it. Final selling analyses show that local goods coupled with actual person-to-person contact go over well in a community. But the local efforts of a beekeeper can do little to create a demand for honey on a national basis. Therein lies the work of the national, non-profit organization, the **American Honey Institute.**

Just how far can the American beekeeper throw his dollar? It all depends in which direction he is throwing it. If it comes the way of the **American Honey Institute**, he can be sure his dollar will go as far as possible.

* * * * *

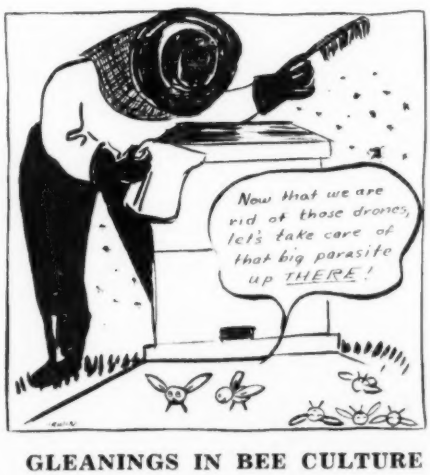
How High Do Bees Fly?

By J. E. Landes

Last September while flying from Dyersburg, Tennessee, to Blytheville, Arkansas, while crossing the Mississippi River at an elevation of 1100 feet I noticed an Italian bee in the cabin with me trying to get out the front of the cabin. I had been flying for about an hour at from 800 to 1100 feet and then took it to the Blytheville airport, arriving in about 15 minutes. Do you have any information on how high the bee flies?

Crystal City, Mo.

[It is assumed that bees, when flying from the hive to sources of nectar, do not get into the air very high, but follow the contour of the earth, especially when windy weather prevails. It is possible, however, that when little air is stirring, bees will fly rather high. It is probable that the bee may have flown into your plane before you started your trip. Possibly some of our readers can throw some light on this question.—Ed.]



Cellar Wintering

By Benjamin Hosley, Canton, New York

A subject, which I am almost willing to call a fad, that is being much talked of in our bee meetings and written of in our magazines is the different methods of wintering so well covered by Charles Mraz in the October 1949 issue of this magazine. When I first began to keep bees the prevailing methods at the time were the so-called dog-house packing for outdoor wintering and the cellar. Little was said of outdoor wintering but the discussions were as to results of the cellar with a dirt or plank floor, maintaining a dry or moist cellar, how far to place the bees from the floor, and different systems of ventilation.

At that time I asked Chas. W. Stewart, who was State Apiary Inspector, which he considered the better method and received the same answer that I would expect from Mr. Gould today — that if I would do my wintering in September and October it would make very little difference where or how the bees were kept. In other words, to see that the colonies were headed with good young queens, plenty of bees, and a little more than enough number one honey to carry them through. Then one need not worry about a winter loss.

Cellar Wintering Cheapest

In all of our bee magazines and all of the discussions in our meetings are methods of outdoor wintering, top or bottom entrances, single tar-paper pack, two to five inches of shavings or chaff insulation, the old dog-house Buckeye or metal pack, etc., but not a word about the cellar. While I have tried most of these different systems with more or less success, I still feel that the cellar for Northern New York at least is the better method for I have had as good results, and as bad ones too, with one as with the other, which has converted me to cellar wintering for I have had as good success by that method as any other and find that it is absolutely by far the cheapest to follow over a period of seasons.

I am often asked, what about outyards? First, find the area where you want to locate your yard, then look for a location where a cellar can be dug back into a hill so that the front will be flush with the outside level. With the cement block of today it doesn't take a high-priced mason or carpenter to lay a wall or build a roof, or a plumber to put in one or two ventilation pipes. Build your cellar big enough to accommodate the number of colonies you want in that yard. A cellar can be built quite reasonably, depending on how much of the work one can do himself. Your wintering expense is cared for as long as you wish to stay in that location and I have yet to find a farmer who won't lease you half or three-quarters of an acre for a couple of 60-pound cans of honey each season, and be glad to let your lease run as long as you care to stay. My experience has been that no matter what method of outdoor wintering you follow the colony expense will run about $2.00 per colony for material and labor, while the cost of a cellar after the first investment is almost negligible.

The claims are made that the outdoor wintered and packed hives are better in the spring and will give a larger per-colony yield. I don't claim to be the best beekeeper in our district, but feel that with the state average of about 40 pounds per colony, while I have been averaging from 100 to 125 pounds per colony for the past 15 years with the major part of my bees being cellar wintered, I am not the poorest beekeeper either. As long as I can get that kind of an average with such a low cost per colony for wintering, I'm just going to stay 40 years behind the times and stick to the cellar.

Write It

Should you have an interesting experience in handling bees or selling honey, or any subject relating to beekeeping, put it on paper and send it to Gleanings in Bee Culture, Medina, Ohio. Other readers might like to know about it. An article is made more acceptable when good clear pictures are included. Suitable material is paid for upon publication.

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Editorials

What is a Good Apiary Location? Our attention is called to statements made by R. E. Newell of Massachusetts in his report for North, East, West and South in the October, 1950, issue of Gleanings, where he says, "Apiary locations continue to differ as in the past. We have a few apiaries where the bees always make some surplus honey but many of our poorer locations have been excellent this past summer and some of those we consider best are only fair this year."

To experienced beekeepers over the country there is something rather mystifying about the manner in which the quality of bee locations can change in a comparatively short time. For example, some years ago in our sweet clover locations we rather assumed that large crops of honey would continue indefinitely from this source. However, as we well know, some of our best locations of ten or a dozen years ago have failed within the past few years. This has been due to a change in crop rotation. More soybeans and grain crops have been grown than formerly and fewer legumes are planted.

In some parts of the midwest sweet clover seems to be staging a comeback. In western Ohio there was more sweet clover this past season than during the past few years.

Parts of Ontario were considered exceptionally good for beekeeping some years ago. From the Department of Apiculture portion of the Ontario Agricultural College Experimental Farm report for 1949 we find that the choice of suitable locations for bee yards is becoming a problem. Sweet clover was quite prevalent in that province 12 or 15 years ago. As a matter of fact, it existed in the suburbs of cities and along roadsides, not to mention large fields used for seed production and pasture. A change in crop rotation in that province has brought about a problem which commercial beekeepers are facing.

For beekeepers in parts of the East who depend on fall honey plants such as goldenrod, aster, Spanish needle, and other fall plants for surplus, the honey sources do not appear to fluctuate as they do in some other parts of the country. For example, in a goldenrod and aster area the flow seldom fails. If the goldenrod flow is light, the chances are the aster will yield abundantly, and if there is a heavy goldenrod flow, the aster may not be so abundant.

There is one point in favor of late fall flows—colonies are likely to fill their brood chambers well with winter stores and that is a satisfaction to beekeepers.

While we have not answered the question as to what constitutes a good beekeeping location, it would seem that each commercial beekeeper will have to solve that problem for himself. In some cases it may mean a considerable amount of migratory beekeeping, moving from one location to another, in order to catch the honey flows. Obviously, this is rather expensive but in some instances it pays. Sometimes the beekeeper moves a number of yards and after moving does not secure a good crop of honey. This is discouraging. It would seem that a location somewhere between summer and fall sources of nectar is preferable in order to avoid long-distance moving.

Examination for Proficiency in Apiculture We recently received a 12-page booklet from the British Beekeepers' Association, issued October 1, 1950, entitled "Prospectus of Examination for Proficiency in Apiculture". Eight examinations in all are offered.

The first is what is known as **Junior examination** for beginners in beekeeping and to meet the needs of schools and scout groups.

The second is the **preliminary examination** open to two classes of candidates, those who have kept and managed bees for at least one year, and those who can produce from their teaching center certificates to show that they have taken an approved course of instruction which must include practical work in the apiary.

The third is called the **practical examination**, intended for those

who have successfully kept bees and have a thorough knowledge of the craft but are disinclined to take a written examination. The candidate must satisfy the examiner that he has knowledge of swarm control, queen raising, diagnosis of bee diseases, and the processing of honey and beeswax. There is also an intermediate examination which consists of written work on practical beekeeping and on the scientific aspects of beekeeping.

The senior examination is open only to those who have passed the intermediate examination. The applicant is to produce a certificate stating that he has **kept** and managed bees for at **least** three full years. The written examination calls for a thorough knowledge of different types of honey, granulation, fermentation, chemistry of honey and beeswax, large scale beekeeping, queen rearing on a large and small scale, and uses of the microscope in beekeeping, together with some knowledge of anatomy, physiology, pathology, and the general life history of social and solitary bees. The successful candidate shall be known as a Master Beekeeper.

There is an examination for judging which has to do with honey exhibited at shows and the judging of same.

There is an examination on lecturing. Candidates are required to give a 30-minute or 40-minute lecture, without elaborate notes, on a subject chosen by the Board of Examiners.

The last or eighth examination is for Fellowship in the British Beekeepers' Association. This involves writing a thesis on some subject having to do with beekeeping or the beekeeping aspect of any related science. Successful candidates are known as Fellows of the British Beekeepers' Association.

It would appear that something of this sort is needed in this country. Many beekeepers, some of them successful honey producers, may have a rather superficial knowledge of the science of beekeeping. While scientific knowledge of bees is not absolutely necessary, such knowledge may be found extremely useful at times. Furthermore, there must be a deep satisfaction in the realization of the fact that one has actually done the work which entitles him to be known as one who actually has a high degree of proficiency in apiculture.

Honey, an Impulse Item As brought out by Mrs. Harriett Grace in American Honey Institute News Notes recently, honey is considered an impulse item. As a matter of fact, there are quite a number of impulse items in grocery stores and each is competing for the housewife's dollar.

Obviously properly processed, clear, clean honey dressed in an attractive glass container, having a label which easily gets the attention of the prospective buyer, will reach the table much quicker than a jar of honey that lacks attractiveness. Labels and containers must have eye appeal and should be placed on the grocers' shelves level with the eye in order to be readily seen.

Honey Market Recent reports received from over the country indicate that honey prices are firm with a slight upward trend in some sections of the country.

Apparently the floor price established has had a beneficial effect in helping to stabilize the market and to prevent price cutting and any unnecessary downward trend.

It is hoped that in the near future honey prices may rise in line with cost of production in order that the beekeeper may realize at least a reasonable margin of profit on his product.

Dark Honeys are Rich in Minerals It is natural for people living in areas in which white honeys are produced to assume that white honeys are preferable. On the other hand, people brought up in communities where darker colored honeys are prevalent become accustomed to those honeys and prefer them to white colored honeys.

On the matter of evaluating the quality of honeys, it would appear that flavor rather than color should be the deciding factor.

It has been and is being said on

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good authority that dark honeys contain more food value and are richer in minerals than light honeys. The late Dr. J. Anderson, M. A., B. Sc., former Editor of the Scottish Bee Journal, is quoted as saying:

"Recent research has shown that dark honey is far richer in minerals than light honey, particularly in iron, which probably is in a suitable combination and degree of solubility for absorption in the human system. It might well be that the time is not far distant when cases of pernicious anaemia will be successfully treated with a diet of dark honey."

Some years ago, when the writer sold extracted and comb honey to grocers in Chicago, which, by the way, is in an area where white honey is produced, an occasional grocer would ask for dark honey, preferably buckwheat comb honey, saying that a few of his customers who had come from Pennsylvania or the buckwheat region of New York State wanted this dark-colored honey and were not satisfied with anything else.

People seem to prefer the honey they are brought up on, and those who like dark-colored honeys are fortunate in that such honeys are rich in minerals.

Oak Trees from Acorns Grow Commercial beekeepers sometimes look upon beginners as folks to be tolerated as a necessary evil. But these beginners, by their enthusiasm, may sell more honey than they can produce and thus help make the buying public honey conscious. A commercial beekeeper can have no more effective helpers about him disposing of a large crop of honey than an enthusiastic group of beginners who do so much to make folks want honey.

Most commercial beekeepers made their start with a colony or two. If they look back they will recall how they talked honey on all occasions and had to buy to take care of the demand.

In a recent number of the bulletin put out by the Indiana State Beekeepers' Association, reference was made to many beekeepers who are selling more honey than they can produce — a condition which prevails among larger producers as well as smaller beekeepers. As long as honey is conspicuous by its absence from the menus of restaurants and hotels, every producer, large or small, every association, local or state, has work to do. No producer is too small to support the American Honey Institute.

To Winter or Not to Winter Bees There are beekeepers in the Far North who kill off their bees in the fall, using Cyanogas, saving enough honey in each brood chamber for starting package bees the following spring. The hives, with combs of honey and pollen, are stored in a suitable building to protect them against mice and the elements during the winter.

This method involves a considerable amount of labor in killing the bees and then removing them from the hives, taking care of the hives during the winter, and then placing them back on the stands the following spring when packages are put in. When this method is used, the beekeeper does not need to worry about wintering his bees. He may have to worry about getting bees at the proper time the following spring. It is necessary to place the order well in advance to be assured of shipment of bees when needed. It is possible with this method to take more honey off hives in the fall than if the bees were wintered.

It would appear that the killing-off method in the fall can be used to advantage in some parts of the Far North. However, it has been found that bees can be wintered in regions where the weather becomes quite cold during the winter, especially if populous colonies are developed for winter quarters and a good quality of stores is available to the bees. It would seem advisable to feed at least a 10-pound pail of thick sugar syrup late in the fall to offset the possible bad effects of poor quality stores gathered late in the fall which might cause dysentery. Those who cannot or will not kill bees in the fall can try wintering them in a cellar or suitable winter repository. However, in some regions of the very Far North, cellar wintering seems out of the question, in which case beekeepers would have to depend upon package bees for starting hives early in the spring.

From North, East, West and South

SOUTHERN CALIFORNIA, Oct. 3

Weather: During September the weather in Southern California continued to be most delightful. Nights and mornings were quite cool — with higher afternoon temperatures. About ten days ago a few places — including Los Angeles — had some showers of rain. Otherwise it has been very dry with the exception of fogs on the coast.

Market: The honey market seems to be in a very good condition with sales quite active. Prices range anywhere from 9 to 12 cents delivered according to the variety and grade of honey. One strange situation exists: Orange honey, which generally brings the best price, is not commanding as good a price as the best grades of sage honey. Beeswax prices are also firm and good prices—up to 42 cents—are being offered.

Condition of Bees: Most colonies are in good condition but in some localities it has been necessary to do some feeding. Those bees which were moved to the alfalfa seed districts and to the cotton and beans are in excellent condition.

Miscellaneous: The Los Angeles County Fair has just closed after one of its most successful showings. Although the attendance fell somewhat below last year's record, there were well over one million people who passed through the gates. This fair is supposed to be the largest in the state of California. The exhibits of honey, beeswax, and bees were exceptionally good this year. And there were many delicious-looking food products on display, with honey as one of the ingredients. Perhaps there were more exhibitors this year than there have been in some years past.

Beekeepers who moved to the alfalfa seed fields and to the cotton districts are, generally speaking, well pleased with the results. The cotton blossoms in the San Joaquin Valley had an unusually good flow of nectar. As for the alfalfa seed fields—the bees made surplus honey with some colonies making as much as 100 pounds. Beekeepers and growers will both be watching with much interest to see what the seed results will be. This will be the case especially where the beekeeper is to receive a percentage of the seed increase.

Most of those who moved to the alfalfa and cotton areas now have their colonies on permanent locations and are getting the bees in condition for the winter months.— L. L. Andrews, Corona, California.

Northern California, September 26

The Weather: Temperature conditions were variable this month with periods of heat and then a spell of cold sufficient to make a fireplace fire feel comfortable. One of the heaviest September rains in 32 years fell in Sacramento and in most portions of north and central California. (It was only 0.63 inches in Sacramento). The rainfall injured more crops than it helped and added little to the water supply. At present—where this is being written—it is warm and humid but I am just across the street from Waikiki Beach in Honolulu, Hawaii. The temperature is around 80 and a gentle breeze is stirring the leaves of the palm tree outside one of the windows. This is vacation land, indeed, where it can rain softly while the sun is shining. But there are many colonies to be examined on the different islands and work to be done. The weather at 12,500 feet on the way over was favorable for a very smooth flight, an enjoyable experience.

The Honey Crop: Reports of California producers indicated an average crop and better than expected in some places where there was ample forage. The quality is also better than last year although there is a tendency to extract all sources at the same time, thus reducing the quality, because of the lack of a differential between the best and the medium to poor grades. It usually

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pays to separate the better honeys from the off-color grades because the discriminative buyer will offer more than the base price of nine cents for the better grades of table honeys.

Alfalfa yielded well until the hot spell during the first part of September, and then tapered off. Ladino clover also yielded better than expected in areas where there were no more than one colony per acre. Trefoil, lima bean, star thistle, and sweet clover generally gave satisfactory yields.

Changing Pastures: The yellow star thistle is being reduced markedly by land leveling operations, intensive cultivation, and by 2,4-D. Irrigated pastures are becoming more numerous, and this means a decrease in the amount of the thistle. Fortunately, some of the land is being planted to legumes or to legume mixtures which afford some excellent locations more permanent than the "yellow star".

Marketing: The price support program is tending to set a level for most honeys at between nine and ten cents, delivered to Bay City points. The price of honey would be considerably lower if it were not for the diversion and the price support programs. More buyers have signed the forms to participate in the support program than had signed by August 15. Prices in the Bay Cities are considerably lower, wholesale and retail, for processed honey in retail containers than is the case in Southern California. This is because of the competition between buyers rather than on the supply or quality of honey being offered or processed. The beekeeper is caught again in the squeeze, but with the price pegged at nine cents the processors are making less than present economic conditions warrant.

Movement of Bees: Colusa County offers a good example of what is happening in some beekeeping areas. Some 3000 colonies are said to have been moved out, generally for pollination or to seed-producing centers, and 5000 colonies moved in from other counties. Some of the latter were moved to Ladino or alfalfa areas. Now many of both classes of beekeepers know that they must receive a fair rental for bees to move long distances. A price of $4 or $5 a colony is not enough when the colonies get only a "fill-up" of honey.

Chemical Poisoning: Some years ago our California beekeepers were asking for legislation that would regulate the use of pesticides in such a manner as to require the materials to be confined to the fields treated. Like an echo out of the past, growers of various field crops (former distributors of such poisons) are now demanding the same thing. Why? Their crops or orchards are being destroyed by 2,-4-D and they can't pin the damage on any particular operator. The principles are the same whether beets or bees are destroyed. It looks as if 2,4-D will hasten the control of injurious chemicals. Many colonies were reduced below an economic level for pollination services or for honey production this summer by the misuse of parathion in particular, and by other poisons. Experience is an expensive teacher.—J. E. Eckert, University of California at Davis.

TEXAS, October 2

Weather: September brought relief from the summer heat and the return to fall weather with agreeable temperature and general rain over most sections of Texas.

Bees and Plants: The rainfall brought on a good bloom of elm, asters, boneset, broomweed, and other plants. Bees obtained considerable pollen and some nectar resulting in increased brood rearing to the extent of six to eight combs of brood in better colonies and assuring plenty of young bees and adequate stores for winter. Many beekeepers are building up new colonies from fall divisions. However, in areas with prolonged drouth prevailing during the summer, fall flowers are scarce and there is some concern over colonies obtaining adequate supplies of winter stores. Some beekeepers are moving to more favorable fall pasture particularly to the hilly section of Southwest Texas where kinnikinnick (evergreen sumac) is coming into bloom. Removal of the surplus hon-

ey crop from the hives has been completed. The yield from vetch was the best in some years and the crop from sweet clover was generally satisfactory, although the yield from cotton was the lowest in some years. From all indications the current year's honey crop over the state is as large as the crop of last year.

Market: Consumer demand for honey in the retail market continues to improve and grocers are well stocked with high grade table honey. A good portion of the crop has been sold to bottlers but many producers are holding their crop for the grocer and retail trade in the expectation of continued good demand. Twelve packers over Texas are now prepared to purchase honey from producers under the price support program.

Miscellaneous: F. C. Brunnemann, County Agricultural Agent of Cameron County, recently issued a report on bee losses suffered from poisoning in cotton fields during the past summer in the Lower Rio Grande Valley, based on returns of questionnaires from 19 resident commercial beekeepers. With colony losses of nearly 100 percent the total loss of bees, combs, and honey exceeds $104,000 which does not include losses suffered by other commercial beekeepers and farmer beekeepers who did not report. Some commercial men likely will not resume beekeeping and fewer migratory colonies are expected to be moved in for the citrus bloom next spring. There is some concern over the shortage of bees by growers who derived benefit from cross-pollination of citrus blooms and particularly pollination of melons, cucumbers, pumpkins, lima beans, peppers, and legume seed crops. Growers have indicated willingness to pay $5 to $10 per colony for pollination service. The North Texas Beekeepers' Association recently was reorganized with Fate Bray of Reno as President; K. W. Pearce of Honey Grove, Vice-President; Erwin Glew of Paris, Secretary-Treasurer. This Association held a Field Day on September 15. The San Antonio District Beekeepers' Association held a meeting on September 21. At this writing The Texas Beekeepers' Association is in session at College Station. A large bee and honey exhibit is planned for the Texas State Fair at Dallas October 7 to 22. More than a decade ago bee exhibits played a prominent part in the State Fair and beekeepers are again determined to make their exhibits the best in recent years.—A. H. Alex, College Station, Texas.

WISCONSIN, October 10

The Market: During the last half of September the honey market definitely slowed down. Some retail chain store managers said business was slow, probably because hoarders got busy when war news first came. One large store manager said they sold a truckload of sugar each day — didn't even bring it into the store. By early October honey began to move again. With prices moving upward, with full employment and increasing wages, it would seem that honey should trend upwards also. We need to stimulate increased use of honey in every way to take care of our production and prevent price cutting. We see evidence that if the 9-cent floor was not in effect, the price would go below that figure on dark honey.

The Crop: Quality is the best in years and production has been good in most of Wisconsin. Again some sections suffered from drouth at the critical period of major bloom resulting in lower yields.

The total yield might have been better but many beekeepers had lost interest by last spring. There was much swarming and lack of good management by those who felt other work was more important. There was a good flow in the fall—August and early September—which should put colonies in excellent shape for winter if the honey was stored in the brood chambers.

Annual Meeting: The Annual Convention of the Wisconsin State Beekeepers' Association will be in Fond du Lac on October 27 and 28. The program will be heavy with talks on New Uses for Honey, National Trends, Price Supports, Better Handling of Honey in Extracting Plants, Attractive Labeling, Types of Jars, and Cooperative Honey Extracting Plants. Are we going too far in one direction and for-

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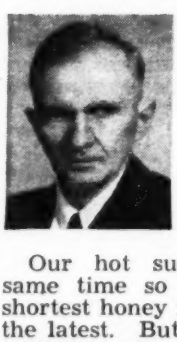
getting about production? A high average yield for all colonies is still necessary to make a living by beekeeping.

Observations: Finished extracting early enough to enable us to get bees in good shape for winter by early October. The early honey being of wonderful quality was put in glass containers for retail trade. By mid-August the quality was not as good—it was just a little thinner due to cool, wet weather, a little darker and stronger tasting, so it was put up for the baking trade. The American Honey Institute has done some excellent work interesting bakers in recipes using honey, and we think it is evident in the amount bakers are using. We find, however, that the bakery is not a place where we can dump off-grade, poorly prepared honey. It must be free from strong odors and be **absolutely clean.**

Care of Colonies: By August we began to prepare colonies to store honey in the brood chambers for winter. Here is good use for queen excluders. We have not been using them during the surplus-honey storing period since we adopted the three - brood - chamber - and - reversing method of swarm control—which is the best method we have ever tried. The excluders had a good effect: the late flow from alfalfa and fall flowers being slow, the bees stored much of this nectar in the brood chambers instead of in the supers. By late September we began to inspect for winter, and found the bees had made excellent winter preparations and very little more work was required. Dr. C. L. Farrar had suggested we close the auger hole entrances in the three brood chambers in August so the bees could use only the lower entrance. This also helped increase the storage of honey in the brood chambers. There was an average of about 40 pounds of honey and pollen in the upper brood chambers, 25 or 30 pounds more in the middle chambers, and some in the lower — good, but not a bit too much, as experience has proven. Examination consisted simply of checking the weight of the brood chambers and checking the brood, both for disease and pattern. If brood was of poor pattern and the queen old, the colony was requeened. The bees will accept a caged queen readily in October, and it may give up a strong colony next spring.

In about 10 percent of the colonies there was still brood rearing in the upper brood chamber in early October, resulting in lack of stores, and those were marked for further feeding either by insertion of combs of honey after brood rearing ceased or feeding several pails of sugar syrup. Several colonies with drone-laying queens were found. These were gassed and the brood chambers saved for package bees next spring as they contained both honey and pollen. — H. J. Rahmlow, Madison, Wisconsin.

MONTANA, October 3



Weather: We had some of the finest Dutch clover blossoms this year that I have ever seen, but the weather was too cold for any honey. The last crop of alfalfa and the end of the sweet clover came in just right.

Our hot summer came at the same time so we had one of the shortest honey flows I ever saw, and the latest. But it was sure a dandy while it lasted.

Honey Crop: All our honey was in cans before October 1. This is much later than other years. I guess mainly because the first two-thirds of the season was gone before the honey flow began.

Some few places they report a bumper crop, others not so good. The crop was produced in the shortest period in our memory. The quality is fine and the heaviest body I have ever seen.

There is so much work in the Northwest that we were in doubt about help for our honey producers. But with a little more efficiency and some former honey producers coming back to lend a hand, the honey crop was handled satisfactorily.

Prices: There is a very much improved demand for honey. A beekeeper near here tells me he is getting 4 cents more in one town than last year. The 60-pound cans of processed honey are bringing $8 to $9 and bulk honey 12 cents per

pound. Most of it is being held for more money.

The call for beeswax is very active with a good advance in price. Sacks and tags are coming in with a good down payment offered.

Miscellaneous: Some bee feeding has started and a general looking over of bee yards before the packing season gets under way. Some of our bees survived better that were not packed. Those that were packed the last two winters did not do so well even though we had one of the worst winters on record. I found bee hives so covered with snow that we would have to jab the shovel down to find where the hives were.

Most of the time bees have been wintered here in one-story hives but this year nearly all have extra hive bodies heavy with honey. One party is leaving the extra hive body only half-full of combs heavy with honey.

This is very near vacation time for many beekeepers. Some are already hunting.

We are not sure about the vacation part of it when we have the packs on our backs climbing the mountains to some favorite lake where the horses can't reach. Sometimes the elk gets heavy after carrying it the first three miles, if the snow gets waist deep and the sun has gone over the mountain and we aren't too certain where the tent is.

One beekeeper for a sideline cuts fir trees and limbs and trucks them further east along with some honey for Thanksgiving and Christmas trade.

A red clover seed grower was here and said there were lots of bees in his clover. He has not cut it yet but is very confident of a good crop.

There are several power sprayers here that are going much of the time, besides plane dusting, but I don't believe we have lost any bees from poison, thanks to our agricultural experts.

The white pine best quality lumber is $240 a thousand feet and scraps $40, so I don't know if there can be many bee supplies had here for another year.

A good many of our fields are back in clover again, though we have not seen much to indicate if the prospects are too good for next year. But the bees are in excellent shape to start winter. It has been snowing here the last few days.—Parson Pile, Corvallis, Montana.

ILLINOIS, October 17

Weather: Central and Southern Illinois had their usual setback during the honey flow this past season. We have not had very much good weather during a honey flow for the past ten years. Previous to that time our average colony production was approximately 91 sections per colony. We are sure that we are better beekeepers than we were 10 years ago, but our crops get smaller. We are not alone as everyone in this area has had the same experience. A few issues back Gordon A. Bell spoke of the small amount of honey in this area. I have not talked to Mr. Bell since the crop has been harvested but he should have a different report now. My travels upstate have taken me near his place. Beekeepers east, west, and north of his home have the best crop in years. In Southern Illinois many reported a 25 to 30 pound average. Here it was about 90 and should have been far above 100 pounds, but the rains came. We have had better weather during the past two weeks than during June. Prospects for honey are good for next season.

Honey Market: Honey is moving well. Of course, our comb is all gone and our chunk had been distributed over a wide area in order to create a larger demand for honey. This year we are moving a small amount of liquid in five-pound glass. We changed the style of jar very radically, raised our price, and we are meeting with good sales.

One large bakery is again using honey for the first time since 1942. Another small baker is making a honey loaf for us. This is white bread and he has used up to 16 percent honey with excellent results. If he can do it, so can other bakers.

Loss of Bees: This state has approximately 50,000 fewer colonies than in 1947. This is a staggering loss of bees. In 1947 we were proud of the 232,000 colonies. The loss of honey plants, poor markets, bee-

keepers migrating to other states, and poison insecticides were some of the reasons. A few years ago the average size apiary in our state was nine colonies. The apiaries are growing in size but are fewer, as the average is now 17 colonies.

Future: We are planning on doubling our present number of colonies, not for pollination, but for honey production. We are not using a single colony for pollination alone. Personally, I get a world of enjoyment in trying to produce a crop of honey. When I lose interest in operating my bees for honey, I expect to quit the business. Pollination payments alone do not interest me in the least. I have enjoyed working with bees and watching supers of sections fill with beautiful snow-white comb.—Carl E. Killion, Paris, Illinois.

ONTARIO, October 10

The active season of 1950 is rapidly drawing to a close and most Ontario beekeepers can look back upon it as one of the most unsatisfactory in many years. In a few localities, notably Hastings County, and parts of adjoining counties, together with the Ottawa Valley, the crop is reported as fairly good. The remainder of the province reports crops poor to fair. In spite of short supply honey prices are lower than those prevailing last year, while production costs have been steadily rising. The net result is that considerable numbers of those who plunged into beekeeping during the war are being squeezed out. More regrettable, however, is that, owing to this combination of poor crops and prices some of our commercial producers with quite considerable investments are on the verge of liquidation. Honey production appears to be in one of its periodic slumps.

These depression periods in beekeeping have occurred at intervals for half a century. It seems to be a case of history repeating. In this connection it is interesting to read some quotations from the September 1950 issue of the Canadian Bee Journal, taken from the issue of the same publication for August, 1900. That was eight years before I got my first hive of bees. Quote: "The honey flow in this locality has been very light, **better than last year,** but will not average more than 25 pounds to the colony.—H. G. Sibbald, Peel Co."

"The honey crop in my vicinity is very light. With nearly all beekeepers it has been a total failure for white honey.—C. W. Post, Trenton, Ont."

And this quotation from Wm. Couse of Streetsville, Ontario, a charter member of the Ontario Beekeepers' Association, now deceased, could have very aptly described the situation this year, just half a century later. Quote: "The honey crop is again going to be very poor, the bees were in only fair condition to begin with and there has been very little white or alsike clover; last season was so dry that the seeds sown did not grow to plants, and this spring so cold and dry that they did not grow to bloom. About all that we can expect honey from now is the thistles as there is not any buckwheat sown in this district."

My rosiest recollections of beekeeping concern the period immediately following the First World War when honey sold at 35 cents per pound. However, the boom was followed by the inevitable bust, and in 1924 the Ontario beekeepers, in desperation, organized the Ontario Honey Producers' Cooperative in an attempt to achieve some measure of control of marketing and prices. That the Co-op. justified its existence is evident from the fact that it is still functioning while similar organizations in other lines have long since fallen by the wayside.

Then came the "hungry thirties" of unhallowed memory when excellent quality white honey sold at 5¾ cents per pound. As the end of that decade approached, the Second World War broke out, and commodity prices began a slow climb toward those that prevailed previous to the great crash in 1928-29. Then in 1941 the Government froze all prices when honey was selling at around 60 cents per four-pound tin. However, the Canadian Beekeepers' Council, a national board organized the previous year, was able to exert sufficient pressure at

Ottawa to gain some concessions as the war years came and went, and beekeepers on the whole did well. Honey was the sweet most readily available. Following the defeat of Germany and Japan, scarce competitors of honey again appeared on the market and honey once more has gone into eclipse. Now, Ontario beekeepers are attempting to meet the situation with a marketing scheme which I mentioned in my notes last month and about which I hope to have more to say later. Such is a brief synopsis of Ontario beekeeping in the last 50 years.

The present phase is, I believe, only temporary, and as in other similar situations, beekeeping will take a course in line with changing conditions and will again assume its rightful place in our agricultural economy.—Allan T. Brown, Peterborough, Ontario.

The Sunflower is an Important Weed

A field of wild sunflowers near Philadelphia, Pennsylvania. The sunflower grows wild in some regions and is considered a weed, but it is a valuable plant for bees as they obtain nectar and pollen from it.—Photo by Paul Hadley.

Asked and Answered

Requeening Laying Worker Colony

Question: Please give me some advice on requeening laying workers. — A. A. Sprague, Mass.

Answer: Unless a colony of laying workers is fairly populous, it is hardly worth the effort and expense involved to try to requeen it. Some advocate shaking all of the bees off the combs into a clump of bushes some little distance from the hive, with the hope that the laying workers will be lost. Obviously, the remaining bees and possibly laying workers will return to the hive where they belong. To introduce a queen to a laying worker colony the queen should be caged safely for five or six days, preferably six. To do this, a strip of wood is tacked over the candy at the end of the cage. At the end of six days remove this piece of wood and permit the bees to eat the candy out of the end of the cage and thus release the queen. During the six days the bees in the colony have an opportunity to become well acquainted with the queen in the cage and when she is eventually released from the cage she is more likely to be accepted by the bees than if she were released from the cage in a short period of time, say two or three days.

Producing Comb Honey in Shallow Frames

Question: I am thinking of specializing in all comb honey produced in shallow frames next year. Do honey packers and buyers buy this more readily than extracted honey? Can a beekeeper easily dispose of comb honey in the frames at a good price and what is it selling for now? I have about 3000 pounds of this year's crop on hand which I do not want to sell so cheap as seven or nine cents a pound. That is why I am planning to produce comb in shallow frames. — V. Smith, Texas.

Answer: Regarding the feasibility of producing honey in shallow extracting frames, it would seem that you might have difficulty in disposing of a considerable amount of honey produced in this form. You could likely work up a local trade that would take comb honey in shallow extracting frames. Some sell this honey at $1 per frame. However, the demand would be somewhat limited. Some cut honey out of shallow frames into chunks, perhaps four or five chunks out of one frame, and then wrap it in cellophane. When properly done this makes an attractive package. However, it is necessary to permit the chunks of honey to drip thoroughly before wrapping and this involves suitable apparatus and labor. We are of the opinion that it would be preferable for you to produce extracted honey as you have been doing. Perhaps you could find a market for the amount you have this year by placing advertisements in your local paper, and erecting an attractive honey sign in front of your house if you are near a highway.

How Long Will Honey Keep?

Question: How long will extracted honey keep and not spoil in 60-pound cans, and also how long will properly liquefied and clarified honey keep in jars without granulation when the temperature is kept warm?—Stanley W. Harris, Jr., W. Va.

Answer: The length of time honey will remain in 60-pound cans depends on the quality of the honey and the temperature of the room in which the honey is stored. Honey that is properly ripened, and by that we mean honey with a minimum of moisture content, can be kept a long time—possibly two or three years. If the temperature surrounding the honey is too high, the honey may ferment, especially if it has a high moisture content. A low temperature is better than a high temperature for preventing fermentation in honey. Honey that is put on grocery shelves in jars or tin pails should be brought to a temperature of 160 degrees F. to thoroughly liquefy it and to destroy any yeasts that may cause fermentation. However, the honey should not be kept at this high temperature longer than 20 or 30 minutes. Such honey should remain in liquid form until it is in the hands of the consumer.

Uniting Colonies in the Fall

Question: I have several swarms of bees and would like to double up so as to have double brood chambers. How should I do it and when?—C. L. Hauber, Pa.

Answer: To double up colonies of bees in single-story brood chambers it is necessary to place one hive on top of another after the bottom boards and covers are removed from the two colonies, preferably side by side, that are united. In our opinion, this uniting should be done late

in the evening, after preparations for uniting have been made during the day. As a rule, the queen in the hive on top will be retained, and the queen in the hive below will be disposed of. At least, that has been our experience. Our suggestion is that you do this uniting early, preferably during September or early October, so that the united colonies may become well established before winter.

Changing Italians to Caucasians

Question: Is it possible to successfully introduce a Caucasian queen to an Italian colony of bees?—E. F. Schilling, Ohio.

Answer: It is entirely possible to introduce a Caucasian queen to a queenless colony of Italians. Both races of bees are practically the same size. They differ somewhat in temperament and behavior. The Caucasian bees are of course dark in color. If you do introduce a Caucasian queen to your Italians, you will be interested in watching the young Caucasian bees emerge from cells after the queen has been laying for three weeks. As you know, it takes 21 days from the time an egg is laid until it develops into a young bee. For a time there will be a mixture of dark and yellow bees in the hive. In due time the yellow bees will disappear and there will be a preponderance of dark Caucasian bees. It will be interesting to keep tab on the length of time you will find yellow bees in the hive.

Feeding Back Honey to Get Comb Honey

Question: What do you think of feeding some extracted honey to colonies used for producing section comb honey? Would it pay? Have you ever tried it?—C. Dillon Sell, Ohio.

Answer: We have had no actual experience along this line. However, by referring to a back issue of Gleanings, we find a statement by the late Editor Geo. S. Demuth, which appears worthy of consideration:

"It is extremely difficult to produce fine comb honey during an irregular honey flow. However, you can greatly improve the appearance of honey by the method you suggest —namely, feeding back extracted honey, but it would require considerable labor and may not prove profitable. In feeding back the honey it will be necessary to thin it somewhat with water so that the bees can handle it more readily. Comb honey produced by feeding back extracted honey is, as a rule, not quite as fine in appearance as that produced during a good honey flow. Also, there is a greater tendency to granulate early in winter, so that this honey should be marketed where it will be consumed early. Formerly, feeding back extracted honey at the close of the season to induce bees to complete comb honey was practiced to some extent in this country. Under some conditions it pays to do this, but most comb honey producers have given up this practice entirely, preferring to sell the unfinished sections locally at a reduced price, and extracting the lighter ones."

In our opinion, this honey should be mixed with hot water—75 percent honey and 25 percent water—so that the bees can handle the mixture conveniently.

Salvaging Wax and Honey from Granulated Combs

Question: Last November we moved to the mountains of Colorado taking with us two hives from our former residence in Narberth, Pennsylvania. Both hives did very well in this mountain country where clover is plentiful. The one on the scale reached a grand total of 324 pounds. I removed supers on September 6 and last evening we extracted. To my dismay about 80 percent of the honey in all the frames which were fully capped had sugared and of course would not extract. Instead of 150 pounds we ended up with about 25. The frames have been stored in a warm room since September 6. What caused the honey to sugar in the hives? Would it be the cool mountain nights? How can I extract this honey without destroying the combs? How can I eliminate this condition in the future?—John R. Fetcher, Colo.

Answer: When honey is granulated solidly in combs, there is nothing that can be done to get it out except to cut the combs out of the frames into a metal container. Place this container into a wash boiler or some suitable kettle that holds water. As the water is heated, the combs of honey will liquefy as well as the wax. After the wax and honey are allowed to cool, the wax, being lighter than the honey, will be found in a solid mass on top of the honey. The chunk of wax is lifted off, after which the honey is strained through a fine cheesecloth to remove any pieces of wax or foreign matter. Within the year we had a letter from an Ontario

(Continued on page 710)

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Bees, Pollen, and Smudge

By Prof. Marsden A. Sherman, Chico State College, Chico, California

For a long time the bee men have been trying to convince the almond growers here in California that greater crop production will result from the proper and adequate use of bees as pollenizers.

It is the practice in almond orchards to plant a row of hard shell almonds and alternate rows of soft shell almonds in order to aid in cross-pollination. The rest is left to Nature.

From time to time expensive spraying and blowing equipment is developed and tried out as an aid to pollination, but the cost is usually prohibitive, and the results are doubtful.

This year for the first time there are more orchards with colonies of bees in them than ever before. It is at least encouraging to see that after 50 years of trying everything under the sun, the almond growers have decided to try nature's most efficient pollenizer, the bee.

Of course there is still a great deal for the orchardist to learn about the use of bees, but given another 50 years he'll get the "know-how".

In the first place the orchardist has no idea concerning the cost to the bee raiser of moving equipment and caring for his colonies once they are moved. They still have the attitude that because they produce the blossoms, and the bees produce the honey, the bee man gets all the advantages. What they forget is the fact that they would be glad to pay a good price to have some mechanical device come in and aid pollenization, but as far as colonies of bees are concerned the orchardist considers them a nuisance.

A most amusing thing is to see the colony distribution among the various sized orchards. One can see small ten or twelve acre orchards with as many as 60 colonies in them, and another 50 acre orchard with between five and ten colonies. Here again the orchardist displays his lack of understanding. There are some studies by our agricultural colleges that would indicate that one colony per acre strategically placed is sufficient, but that of course depends solely upon the strength of the colony. If the colonies are not strong, then five colonies to the acre wouldn't do the job.

Of course the orchardist doesn't know a strong colony from a weak one so he decides on the number of colonies arbitrarily. In most cases he isn't doing his orchard much good.

Even if the orchardist has sufficient strong colonies, he insists that they be placed in some out-of-the-way corner of his orchard so that it doesn't interfere with his discing and spraying, and if many of the bees visit his neighbor's orchard he is not aware of it. Nor is he aware of the damage he causes in careless spraying activities. To him bees are a necessary evil and he displays a lack of consideration at every turn. Where the orchardist should seek the aid of the bee man, usually it's the other way around.

Finally, the most colossal thing the almond grower does is smudge. Long before the trees begin to bloom, smudge pots are distributed throughout the orchard. They usually consist of large tin cans picked up at some nearby cannery and placed in groups of two or three between the trees. They are filled with oil, about a gallon each, and a piece of tin with a clod of soil is placed over the top to keep out the moisture.

There are many varieties of almonds and each one varies in its blooming period so that there are times all during the blossoming period that trees have buds, full blossoms, and blossoms that have reached maturity and dropped.

About the time the blossoms are in full swing you will find bees in large numbers in and around the trees. They gather pollen and nectar and begin to replenish the supply that was depleted during the winter. The honey that is made from almonds is unmarketable because is has a strong bitter taste, but it does aid in feeding the bees for a short period starting about Washington's birthday and running for ten days to two weeks.

More often than not, about the beginning of the blossoming period a frost warning is broadcast and smudge pots are lighted in the early

morning hours. From that time on, you won't find a bee anywhere near the almond trees.The soot and small particles of oil cover everything, not only in the immediate smudging area but for great distances in all directions. It covers every flower and blade of grass and inactivity in every bee colony reigns supreme.

Smudging is an extremely expensive operation. Oil costs approximately 13 cents a gallon and it costs hundreds of dollars each night to heat an average sized orchard. If bees are an aid to pollenization, and if pollenization is necessary for a good crop, then it seems that the cost of smudging plus the losses caused by making it impossible for the bees to operate would make it highly unprofitable to smudge. The orchardist, however, doesn't think so. He goes right on spending his money for oil to gamble on saving a crop that is probably curtailed through the lack of proper pollenization as much as through freezing.

Smudging during the blossoming period is only effective for those blossoms which have already set. The buds and blooms are still coming on and will not be affected unless there is further freezing. Smudging at this time may only be affective for a third of the potential crop, but any effects on pollenizing the other two-thirds of the blossoms causes much greater damage than freezing. The proper time to smudge, it would seem, would be after the blossoms are completely set. This would insure a maximum of crop through complete opportunity for pollenization, and protection from freezing at a time when the highest potential crop actually exists. This would be a great boon to the orchardist and bee man alike.

Bee Demonstration to High School Students

Fate Bray, President of the North Texas Beekeepers' Association (hand on observation hive) and C. J. Bergen, State Bee Inspector, (seated, center) gave talks and demonstrations on beekeeping to a Cooper High School Agricultural Class at the annual Field Day of the Association held in Cooper on September 15. Ira Black, teacher of the class, is at the extreme right of the picture.

Others on the program included K. W. Pearce of Honey Grove, Vice-President; U. H. Benson, Assistant Bee Inspector; and County Agent L. M. Hendley of Delta County. Mr. Hendley estimated that 10,000 acres of vetch and 20,000 acres of Hubam clover will be planted in Delta County for the 1951 crop.—Photo by House & Son, Commerce, Texas.

A Talk to Beginners

By M. J. Deyell

Editor M. J. Deyell

Winter Around the Corner

Whether we like it or not, winter in this hemisphere will be here before we know it. Honey bees seem to sense the nearness of cold weather before it arrives and begin making preparations.

Period of Quiescence

By this we mean that during the early part of the winter—November, December, and most of January in this and northern latitudes—bees are comparatively quiet and do as little work as possible. Most queens stop laying for a few months. Occasionally a queen introduced late in the fall may continue laying a few eggs, even during a period of quiescence.

The bees consume enough honey to keep alive and apparently avoid unnecessary activity. When a good flight day comes, the bees will fly out of the hive, especially if they have been confined for a time.

The Winter Cluster

This is an interesting and, in fact, a marvelous phenomenon. When the temperature within the hive reaches 57 degrees F., the bees start to form what is called the winter cluster. As the temperature goes lower, the cluster forms more tightly and if the temperature outside the hive goes below freezing or to zero, or lower, the cluster becomes more compact. The interesting thing about the cluster is that the bees on the outside of the cluster will form a sort of shell or periphery about two or two and a half inches in thickness. The shell consists of bees, pointing their heads toward the center of the cluster in a solid mass, while the bees on the inside of the cluster are not so compact but are moving about and loosely clustered. It seems that the bees in the middle of the cluster generate heat by muscular activity and the bees in the shell retain a portion of the heat generated. It is said on good authority that the temperature in the middle of the cluster never goes below 57 degrees F., even though the temperature outside the hive, and outside of the cluster in the hive, may go down to zero or lower.

As a rule long spells of cold weather do not continue more than a week or ten days. During a warm spell that follows the cold spell, the cluster is able to move up onto fresh honey before another cold spell comes. Once in a while, however, there may be a continuous cold spell for three weeks or a month, and it is during such a cold spell that some colonies perish.

When beekeepers learn more about how bees actually pass through the winter they will begin to realize the necessity of having an abundance of honey in the hive, especially above the cluster which moves up on the combs of honey.

How Nature Helps Bees Form the Brood Nest

It will be noted that we use the term brood nest and not brood chamber. These terms are not synonymous. A brood chamber is a portion of the hive where brood is reared, while the brood nest is the portion of the combs in the brood chamber where brood rearing occurs, and during the broodless part of winter it is where the bees cluster.

In some sections of the country, where there is little if any fall honey flow, queens stop laying rather early in the fall. In a region where there is a fall honey flow, queens may lay right through September and the fore part of October. However, when cool nights come, queens naturally curtail their egg laying.

During a cold spell in late September or early October, such as we have had around Medina recently, brood rearing has slackened considerably and much of the sealed

brood has emerged leaving cells empty on the outer edge of the brood nest.

In this part of Ohio there is an abundance of white aster which usually yields well, even after a light frost. When a warm spell follows a cool spell, the aster will begin to yield nectar and bees will carry in nectar very rapidly and will store it in the brood chamber in the cells from which brood has recently emerged. This is exactly as it should be. The combs in the brood chamber need to be well filled for winter stores. There will usually be enough empty combs at the bottom portion of the brood nest for clustering space during cold weather. The winter cluster will then cover the empty combs and will extend up onto the sealed honey above.

Late Fall Flow a Problem

In this area the late aster flow creates a problem for beekeepers. We have seen this aster honey flow continue until the middle of October. A few years ago colonies in this area stored 75 pounds of surplus honey after October 2. There was a spell of warm summer weather with the temperature around 80, when the bees worked as they do in summer. Fortunately, after this late flow there was a warm spell in late October which permitted the bees to drive off the excess moisture from the nectar and cure the aster honey. If the weather had turned cold immediately following this late aster flow, the bees would not have been able to cure the honey properly and this would have resulted in dysentery among the bees during the winter. Once in a while this happens and there is nothing a beekeeper can do about it.

Double-Story Wintering

Most beekeepers winter bees in two stories, the upper story being called the food chamber. This should be quite well filled with honey in addition to some honey in the lower chamber. The winter cluster will form with the center of the cluster a little below the space between the two sets of frames. This is an ideal arrangement because the bees can then move sidewise onto fresh combs of honey if necessary.

Single-Story Wintering

There are some beekeepers who winter colonies in single brood chambers. This can be done, espe-

A winter scene showing two-colony winter packing cases in the apiary of Carl E. Killion, Paris, Illinois.

cially if comb honey is produced, in which case there is likely to be more honey in the brood chamber in the fall than when extracted honey is produced. It is well, however, to see that the combs are quite well filled. It is usually necessary to feed sugar syrup when bees are wintered in single-story brood chambers.

Late Fall Feeding

When feeding sugar syrup in November it is well to mix the syrup a little thicker than two parts granulated sugar to one part of water. In fact, two and a half parts of sugar to one of water is about right. The syrup should be fed warm or almost hot so that the heat of the syrup will warm the bees in order that they will take it.

Some beekeepers use tartaric acid in the syrup to prevent crystallization of the syrup in the combs. When this is done, about three-quarters of an ounce of tartaric acid for each 25 pounds of granulated sugar is about right. The tartaric acid also prevents the syrup from crystallizing over the holes in the cover of a 10-pound pail when used for feeding.

Upper Hive Entrances

The upper entrance is by no means a new idea. Langstroth used it almost one hundred years ago. It appears to answer two purposes—it provides the bees an opening to fly out during the winter in case the bottom entrance becomes clogged with ice or dead bees; it tends to assist the bees in expelling excess moisture from the hive during cold weather.

There appear to be differences of opinion as to where the upper entrance should be located. Some like it at or near the top of the hive. Others prefer to have it somewhere in the middle front part of the hive. Some years ago, when we first started using the upper entrance, or winter flight hole, we bored a five-eighths-inch hole about an inch above the hand hold of the upper brood chamber, usually called the food chamber. Some bore this hole in the hand hold. When this is done, the bees have a small projection or landing place when flying into the hive. Our only objection to this location for the upper entrance (and it is not a serious one) is that the fingers of the operator may come in contact with flying bees, especially during the height of the season when handling or lifting the food chamber.

Those who prefer a top entrance can easily make one by turning the inner cover upside down after cutting a small piece about one inch wide out of the front part of the rim of the inner cover. When this is done, the outer or telescope cover can be pushed forward as far as possible, making space for the bees to get in and out this top entrance. The outer cover serves a good purpose in that it prevents wind from blowing directly into this top entrance.

Another advantage in using this type of entrance is that during the summer months, when the top entrance is not needed, the inner cover can be used with the flat side down instead of being inverted, thus doing away with the upper entrance which is not needed in the summer time. Furthermore, this simple type of upper entrance gets away from boring a hole in the front of the hive, which to some beekeepers is uncalled for because it mutilates the hive body. However, for those who have already used the middle auger holes, it should be said that a cork of the proper size can be inserted in this hole during the summer months.

There appears to be another advantage in using the upper middle entrance—namely, that this middle entrance occurs almost adjacent to the winter cluster. A winter cluster forms near the front of the hive above the main bottom entrance. As the winter progresses and as the honey in the combs in the upper portion of the cluster is consumed, the cluster naturally moves up gradually.

It will thus be seen that bees in the cluster that need a short winter flight to void their feces on a day warm enough for bees to fly can easily slip out of this upper entrance long enough to take a short flight, then fly back into the hive. We have frequently seen this occur during a sunshiny day in midwinter when the temperature outside the hive is not warm enough for a good cleansing flight but did permit a short flight directly in front of the hive. If I am not mistaken, bees can fly for a time at least in a temperature a little above 40 degrees F., but a 40-degree tempera-

Part of a sweet clover patch somewhere in Minnesota. Taken July 1950 by Jack Deyell.

ture may eventually numb the wing muscles of the bees, causing them to drop down to the ground.

Facing Hives South

After having experimented with facing hives in different directions, we have come to the conclusion for this area at least that there are advantages in having hives face south. As already mentioned, the cluster forms near the front of the hive and if the hive faces south and the sun strikes the front, the cluster is more easily warmed so that the bees can shift their position or take advantage of a suitable flight day that may occur during the winter. Some years ago we faced a number of our hives east. On one occasion when we had a sunny afternoon, with the sun shining from the southwest, we found a few colonies with bees trying to get out of the southwest corner of the hive where it was warm instead of flying through the entrance which faced east.

Easy Way to Provide Middle Entrance

This brings me to a very simple method of providing a middle entrance on the southwest corner of a double-story hive facing east. Simply lift or push the southwest corner of the food chamber back a bit to make a small bee space between the upper and lower bodies just large enough for bees to get out and in. When this is done you will observe that the lower body furnishes a small ledge on which bees can light when flying into the hive. A small opening approximately one-fourth inch wide and one inch long can be made in front without having any entrance occur at the back of the hive.

Don't Let Pollen-Filled Combs Fool You

For those who are estimating the amount of stores left for bees during the winter, it is well to take into consideration the amount of pollen that combs in the brood chamber are likely to contain. Authorities now tell us that a normal colony should have from four to six combs of pollen. As you have doubtless observed, pollen is packed into combs during the late summer and fall months and the cells are a little over half filled. A little later on, bees are likely to store honey over the pollen and these combs containing pollen in the lower half of the cells and honey on top capped over may have the appearance of containing only honey. It is usually possible to tell whether or not a comb contains pollen by holding it up to the sun or by push-

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ing the end of a match through the capping of the cell down into the pollen.

This pollen, as explained in previous talks, is very essential for brood rearing in early spring, especially during a cool spell when bees are unable to collect pollen from natural sources. What a marvelous provision of Nature this is! So far as we know, this pollen, covered over with honey in order to preserve it, is as fresh and useful for larval food as it was the day the bees collected and packed it into the cells.

I have read and have been told that bees pack this pollen into the cells with their heads. I doubted this until I actually saw it done by the bees by observing them in an observation hive some few years ago.

Don't Tinker with Colonies Too Much in the Fall

I have come to believe that most beekeepers do too much tinkering with their hives. If they would permit the bees to form winter brood nests and to store an ample amount of honey and pollen in the combs of the brood chambers, then let their colonies strictly alone, especially during the late fall months, instead of interchanging combs, the bees would fare better during the winter months. After the bees have done what they know they should do and the owner comes along and exchanges some combs and interferes with their plans, what can the poor bees do about it? It is too late in the season for the bees to rectify any mistakes the owner may have made and such colonies may pass out before spring.

Bee Stings for Skin Disease

By H. A. Sadler, Christleton, Chester, England

Having had a small patch of some kind of skin disease on my thumb for about three years I decided to try a few bee stings on the affected part as the doctor's treatment was not producing results.

The disease was **lichen planus** (a type of eczema, I believe), and was diagnosed by a skin specialist.

Bees were made to sting the irritated spot as follows:

September 13, 1949 — 2 stings
September 15, 1949 — 1 sting
September 20, 1949 — 2 stings
September 23, 1949 — 3 stings
September 24, 1949 — 3 stings
September 25, 1949 — 1 sting

The stingers were left in the wounds for five to ten minutes to allow the poison sac to be emptied.

Since then I have had no irritation and the skin is resuming its natural state (now December 7, 1949).

I might add that before going to the doctor I had twice killed the skin with frequent applications of iodine, stopping only when blisters appeared.

What are the possibilities of the above? One or two points may be worthy of note. It is possible and likely that other skin diseases may not be touched by the venom. It may not be necessary to give the number of stings I used. My position is that I get hundreds yearly, and a few more or less make no difference.

How did the cure work? Perhaps the venom killed the responsible agent, or were the body's defences rushed to the spot to deal with the invading poison, and the **lichen planus** died in the ensuing struggle?

Before trying the above on anyone who has not previously been stung by a bee it would be wise to make sure the patient is not allergic to bee stings. This could be done by giving just one sting and leaving it in the wound for a few seconds. A second sting could be given the next day leaving the stinger in a little longer, and so on.

[If some of our readers have had experiences similar to those of the writer of this article, please let us know.—Editor.]

American Honey Institute News Notes

By Harriett M. Grace, Director
Commercial State Bank Building
Madison 3, Wisconsin

The Home is Your Market Place. The Home with a family is your best prospect.

The American Honey Institute creates a demand for your honey **before** the consumer enters the retail store by:

(1) Advertising

(2) Sales Promotion — working through home economists, schools, and allied industries.

(3) Publicity — radio, television, magazines, and newspapers.

This has been a good honey year —good crop, good quality honey, good sales.

A beekeeper wrote the following letter to the **Institute** after he had received a "thank you" note:

"Don't thank me for sending you money. I am the one to do the thanking. You are working for me —doing work I cannot do. I am indebted to you and the least I can do is to give a little of the funds needed to carry on this important work."

Another beekeeper wrote:

"Enclosed is my contribution. I would certainly be a piker if I didn't send you money this year."

The **Institute's** greatest wish is to have every beekeeper listed in the annual directory.

Now is the time to send your contribution. The **Institute** has no one collecting money or honey for it. All dues are sent directly to **American Honey Institute,** Madison 3, Wisconsin. A receipt and membership card will be mailed to you and your name and address with the amount paid will appear in the annual Directory.

Special Honey Fruit Cake Leaflet

A honey Fruit Cake Recipe folder with a picture of this delicious cake is ready for you to distribute. While the supply lasts you may purchase them at one dollar per hundred, postpaid.

A Brand New Five-Pound Pail Leaflet

One of the nation's most successful "beesness men" has used thousands and thousands of these leaflets during 1950. In fact, he placed two orders of 5000 copies each within six weeks. His honey really moves and he attributes his success to his fine quality honey plus this leaflet.

One would need to be ubiquitous to accept all of the invitations Mrs. Grace has to speak at beekeepers' meetings and to meet with executives to plan marketing or advertising programs. At present 12 invitations are on her desk for meetings before the first of the year.

Colored Film Available

Through the courtesy and generosity of Huber H. Root, President of The A. I. Root Company, Medina, Ohio, the **Institute** has a colored film showing the **Institute** offices, its staff, and its work. You may borrow this film for use at your meetings if you will let us know about it in time and return it promptly. It is a 16mm film. It takes 15 minutes to show it. A copy of a talk to accompany it will be sent if desired.

Marketing Hints

Let us place Honey in various size containers at eye level—near the door of the store where the customer enters.

See that a recipe leaflet goes with each container.

Mirrors tipped in a store give the appearance of bigger displays.

Let's give the consumer a service in the form of recipe leaflets, books, a honey dispenser, reusable container, a two-ounce sample of a different flavored honey or a sample of creamed honey to try out along with the regular honey she purchases.

The trend today is to make shopping easier for the consumer.

Fewer people are producing — more people are buying.

The **Institute** has been serving you since 1928.

Cover Photo

Autumnal Days on the Bee Farm

Photo taken on the property of Leslie Warren, Rochester, N. Y. Mr. Warren raises about 17 hives of Italian honey bees. Photo by Bob Milo, Rochester, N. Y.

XUM

Just News

The Third Annual Beekeeping Short Course sponsored by the Virginia Agricultural Extension Service will be held in Charlottesville on December 7 and 8, 1950, at Hotel Albemarle. Anyone interested in attending should contact John M. Amos, Virginia Polytechnic Institute, Blacksburg, Virginia. The program was postponed in August due to the polio epidemic in the state.—John M. Amos, Assoc. Ext. Ento.-Plant Path.

* * * * *

The Empire State Honey Producers' Association will hold a winter meeting in the Syracuse Hotel at Syracuse, New York, on November 24 and 25. Jas. I. Hambleton, Marvin Webster, Alan Root, and other prominent speakers will appear on the program. A cordial invitation to all.

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J. N. Harris of St. Louis, Michigan, one of the really old-time Michigan beekeepers, passed away on September 27 at the age of 91. He was a subscriber to Gleanings since 1879.

* * * * *

Marshall D. Levin was recently appointed as apiculturist for U.S. D.A. Division of Bee Culture and assigned to the cooperative Legume Seed Research Laboratory at Logan, Utah. He will be working with George E. Bohart, entomologist, and William P. Nye, apiculturist, on pollination of legume seed crops by honey bees and wild bees. Mr. Levin graduated in entomology from the University of Connecticut in 1947 and received his master's degree in entomology at the University of Minnesota in 1949. His thesis work on the nutrition of honey bees was done under the direction of M. H. Haydak. He has had several seasons of experience with commercial beekeepers and with the University of Minnesota apiaries and also has kept colonies of his own since boyhood. Thirteen months spent in England with the Eighth Air Force gave him opportunity to visit and work with a number of beekeepers and visit several apiaries. While attending school following his discharge he has found time to marry and father two future beemen, one just arrived.

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The Southern States Beekeepers' Federation and the American Bee Breeders' Association will hold their meeting at the Hermitage Hotel in Nashville, December 4, 5, and 6.—L. H. Little, State Apiarist.

* * * * *

The Bronx County Beekeepers will hold their November meeting at the New York Zoological Gardens on November 12 at 2:30 p.m. We will have as our speaker Dr. William Beebee, Director of Tropical Research for the New York Zoological Gardens. — Mrs. Eleanor Kopeck, Sec.

* * * * *

The Cuyahoga County (Ohio) Beekeepers' Association will meet on the afternoon of November 12 in Cleveland at the Miles Avenue Church of Christ Hall, 9200 Miles Avenue. A worthwhile program including a movie film by Huber H. Root is in store for those who attend. A cordial welcome to all.

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The annual meeting of the Iowa Beekeepers' Association will be held at Ames on November 16 and 17. The program this year will be based entirely on member participation. The entire session will be turned over to the discussion of one topic which will be presented by six ten-minute speakers with discussion from the floor for the rest of the session. Pollination will be the topic for Thursday afternoon, an association program for Friday forenoon, and marketing for Friday afternoon. It is hoped that a large attendance will enable a complete discussion of these topics. — F. B. Paddock, Extension Apiarist.

* * * * *

The Westchester County Beekeepers' Association will hold its first fall indoor meeting at the Odd Fellows Hall, 20 Lockwood Avenue, New Rochelle, New York, on November 19 at 2:30 p.m. Guest speaker for this meeting will be Dr. E. F. Phillips. His subject will be "Moses Quinby and his Smoker". A special invitation is extended to The Bronx County Beekeepers' Association,

Nassau County, Suffolk County, and Rockland County Beekeepers' Associations. This promises to be a most interesting and educational meeting and all members are urged to make a special effort to be present. A cordial invitation is extended to anyone interested in bee culture.—A. M. Barnes, Publicity.

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The first indoor meeting of the Middlesex County (Massachusetts) Association which was originally scheduled to be held at their former winter quarters was transferred to the new Commonwealth of Massachusetts Agricultural Experiment Field Station at Waltham. Arrangements were made by member Prof. Robert Cheney of M.I.T. at the direction of President Baptiste and through the cooperation of Ray M. Koon, Head of the Waltham Field Station. The new headquarters which permit all members and visitors to be seated at one time were enjoyed and appreciated by all. The supper, which consisted of old fashioned New England baked beans, Boston brown bread, and ham with assorted casserole dishes, home made pies, and coffee was prepared and served by the men members only. At a short business meeting after the supper it was voted to hold the next meeting on November 25 at the new winter headquarters. After the meeting Secretary-Treasurer John H. Furber projected Kodachrome color photos taken as records of the outdoor meetings from May through September including special meetings at York Beach, Maine, and Monument Beach, Cape Cod, Massachusetts.—John H. Furber, Sec.-Treas.

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The Forty-Fifth Annual Convention of the **Tennessee State Horticultural Society, Inc.,** will be held at Nashville, Tennessee, on December 6 and 7, with headquarters in Andrew Jackson Hotel.

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The Boone County Fair was held in Columbia, Missouri. The ham breakfast is an annual affair and is held in connection with the Fair. They have a ham breakfast in Boone County which is famous for its hams. It is an old tradition of the early settlers to cure their own meat and the tradition has been handed down from generation to generation. The ham breakfast was a big success this year and served with the ham was blue vine honey furnished by L. B. Garrard, Nob Hill Apiaries. It was enjoyed by the 300 or more people who attended the breakfast. Mr. Garrard is one of Boone County's largest beekeepers and is in the Blue Vine District of Boone County. Blue Vine Honey is one of the state's choicest honeys.

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The Illinois State Beekeepers' Association meeting will be held at St. Nicholas Hotel, Springfield, on November 10 and 11.

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Honey Report—October, 1950 — According to this report by the Bureau of Agricultural Economics, U. S. Department of Agriculture, as of October 16, 1950, the estimated honey crop for the U. S. A. for 1950 is 234,153,000 pounds which is 3 percent more than last year's crop. The per-colony average for 1950 is 41.7 pounds compared with 40.6 pounds last year. The estimated number of colonies in U. S. A. in 1950 is 5,612,000 colonies as compared with 5,591,000 in 1949. Honey production is above last year in all regions except the North Atlantic and Western States.

* * * * *

Construction of an extracting house for the 4-H club apiary at Camp McQuarrie, near Astor Park, Florida, is getting under way now, according to John D. Haynie, apiculturist with the Florida Agricultural Extension Service. The 15 by 30 foot building will be used for 4-H classes in beekeeping during the summer camping season, preparing the colony for the honey flow, removing honey from bees, extracting honey, and storing beekeeping equipment during the winter. J. M. Johnson, Extension Service Engineer, drew the plans and is supervising construction of the building. Beekeepers are contributing cement and other materials for construction of the building. — From Agricultural News Service, College of Agr., U. of Fla., Gainesville, Oct. 12, 1950.

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The California State Beekeepers Association will hold its annual Convention at the U. S. Grant Hotel, San Diego, Calif., on December 5, 6, and 7. The highlights of the meeting will be Marketing and Pollination.—H. J. Crawford, Pres.

XUM

Why Are Bees Hymenoptera?

The End of the Myth of the Mating Flight

By Torquato Tramontano, Sorrento, Italy

Prof. O. W. Park, in "The Hive and the Honeybee" (1949 Edition), says about the zoological classification of the honey bee:

". . . . labeled **Hymenoptera** (marriage on the wings) because the insects of the order **Hymenoptera,** which includes the honey bee, typically mate in flight, this translation is far more distinctive than membranous wings, which had been used heretofore. See Nabours, Robert K., 1945. The Derivation of Hymenoptera. Ann. Ent. Soc. Amer. 38: 457."

I stick to the old translation because I cannot accept a classification for **Hymenoptera** which is based only on the place where they mate, since other insects, as **Libellulae** and some butterflies mate on the wings, while some **Hymenoptera,** genus **Apis,** mate on the ground.

The fact that the queen bee, while flying, grasps her drone from the back, and that both plane together to a stone or a tree, does not mean they are mating, if mating happens as soon as they reach the stone or a tree, or a solid basis anyhow.

I have no literature to back my theory, as all which I read is in opposition to it, but I rely on a personal observation for **Xylocopa,** which is strictly akin to **Apis mellifera** and, of course, must have a similar anatomy and a rather similar way of acting.

Taking this into consideration, I would dare to compare with mine an observation made on bees by Plinio Giordano, and explain by inductive analogy what has not been seen in each of the cases.

I may be mistaken, therefore I shall prize any debate, but at the same time I shall be very glad if my casual experience may add a small drop of knowledge to the infinite ocean of science.

I was in my garden enjoying the humming of my bees on a warm spring day when some big bugs flew over my shoulder and landed on a log less than one yard from me. It was a couple of **Xylocopa cianescens** which were mating. They were one on the back of the other, their abdomens pulsated with the characteristic movement of all other animals, and they emitted a sound similar to the friction of leather contemporaneously to the pulsations.

I did not hear the sound before the landing, nor after, when the upper one departed. The other one left the place a few seconds later.

This is what I saw with my own eyes and what I heard with my own ears. It was too near to me to be mistaken.

Therefore I have to say: The solitary bee **Xylocopa** (female) grasps her companion (male) while flying, they plane to the ground, there they mate, emitting a special sound, then they part flying in opposite directions. I do not know if the male dies after mating, as both of them flew away.

More interesting is what Mr. Giordano wrote in "Revista di Apicoltura" in 1936. I do not translate his entire article, which was written in opposition to John Spiller's theory, but I translate only the story he tells, omitting his comments, which of course are based on the old belief that bees mate in flight.

"When during the daily hours of contemplation in the apiary, the happiest hours of my day, I saw, that morning of May, descending not many meters away from me, very rapidly yes, but with no falling as for a vol plane, a big indistinct insect, I run at once, pushed by curiosity, hoping to catch it.

"I remember, that year I was hunting for **coleoptera** for an entomological collection.

"I was so surprised that my heart beated with emotion. . . . . Who would have ever thought of such a thing?

"On the ground, a queen and a drone, descended from the space at that precise moment, were still bound in the position which certainly is normal to them. The queen, as a real dominator, was above the drone; they came down, flying together, not fallen, as often is said. Therefore no whirling flight, and no explosion."

Here the author explains how the facts happen in the air, but he adds

that he could not observe all this with his own eyes because they happened far away and on the wings..... "but it is the logical argumentation of what I saw in the conclusive phasis of the wedding trip, as I said above, when the drone losing his strength and made heavier by the weight of the queen, came down quickly in the direction of the apiary.

"On the ground the queen left her dominating position and dismounted her exhausted lover and pulled in the opposite direction to get rid of him. The drone's organ was broken at the basis with the thinner part remaining always sheated and carrying the canals of the seminal glands. The queen, being free, after one second flew directly to the hive from which she had come, carrying the white filaments out of the abdomen....."

Conclusions

How long did it take Mr. Giordano to walk the "not many meters" which separated him from the couple of insects?

What happened in the meantime? He says he saw the terminal phasis. Was the preceding phasis also performed on the ground? Was the beginning also like that?

Am I not entitled to suppose that the mating of the queen bee was exactly the same as for **Xylocopa?**

I firmly believe that the story of queen bees marrying on the wings is only a fairy tale.

Queen bees mate on the ground.

Display Your Honey

A display of bees in an observation hive as well as honey and honey plants—together with a sign containing some pertinent information on bees for pollination—used at a fair helps to acquaint the public with the importance of beekeeping.—Photo sent by C. S. McReynolds, Clearbrook, Minnesota.

XUM

A Backlotter Who Packs His Bees

By W. E. Shade, Egmondville, Ontario, Canada

Since I was greatly interested in dry sugar feeding for bees I thought I would give it a trial. I tried paper on the frames and poured the sugar over the paper. This worked all right but the inner cover had to be lifted to do this so I tried a better plan. I filled some pint and quart size jars with dry cube or loaf sugar, put a piece of paper over the jar and screwed on the ring. Then I punched a few holes in the paper and opened the hole in the inner cover, inverted the jar over the hole, folded the paper and packing over the jar, and put on the lid.

This way one can tell by moving the lid and packing when the jars are empty. I sometimes use two jars. It takes mostly a week for a strong swarm to use a couple of pint jars of cube sugar. I start feeding in March and have had wonderful success with this method. The bees do not have to be disturbed and one can tell at a glance when another jar of sugar is needed. Pollen can be fed in the same way. The time when the dandelions are in bloom the bees are sure strong and ready to go to work.

I pack my bees in the tar paper pack with two openings, the top one, five-eighths inch, being located four inches down from the top of the double brood chamber. I always winter in double brood chambers, the top box being full of good sealed honey.

I use leaves or straw for packing about three inches on the sides and back and two inches in front and six inches on top of the inner cover. A large size lid fits right down on the tar paper.

I keep three races of bees—Italians, Caucasians, and Carniolans. I must say that they are all good. The Caucasians winter better on less stores than the Italians. I have all the three races in the same yards and requeen every two years.

I have a few hybrids, some that requeened themselves. They, too, are good nectar gatherers. If anyone were to ask me which is the best race of bees for all-around honey gathering I would pick the Caucasians every time. They are more gentle, nice to work with, and are out working when the Italians are loafing around the hive. The Carniolans are good but need watching in regard to swarming. The Italians and Caucasians do not need this attention. I have all my swarms in the back yard and never have any trouble with the neighbors. I have wintered in tar paper for the past four years and never lost a colony.

Two openings in the winter packing and the cover on top of the packing has given successful wintering.

Siftings

"What we need is fewer hives and more bees in them."—Clarence Tontz in August 1950 Gleanings.

"It may interest you to have me write of my first experience with the tulip tree. In 1886 I noticed that the bees were busy, and thinking they might be getting honey from the big tulip tree in the yard nearby, I went over to take to look. Pulling down a branch I looked into a blossom and was amazed to see nearly a teaspoonful of nectar in it, enough to load up 25 bees." —From a letter dated September 20, 1947, to E. R. Root from Allen Latham of Norwichtown, Connecticut.

Buy and Sell Here

Only responsible advertisers and honest advertisements will be admitted to these columns. References required from new advertisers not known to us. Rate: 15c per counted word, each insertion. Each initial, each word in names and addresses, the shortest word such as "a" and the longest word possible for the advertiser to use, as well as any number (regardless of how many figures in it), count as one word. Copy should be in by the 10th of the month preceding publication.

HONEY FOR SALE

WE BUY AND SELL all varieties of honey. Any quantity. Write us for best prices obtainable. The Hubbard Apiaries, Onsted, Michigan.

NEW CROP of honey shipped daily from producer in Florida. Pure orange blossom, 5 lbs., $2.25; Pure Florida cut comb honey, 5-gal pail, $2.75. No C.O.D orders. All shipments prepaid. E. R. Raley, Daytona Beach, Box 1610, Florida.

HONEY, white to water white clover, heated and strained, ready for bottling. 15c per lb. in 60-lb. cans, fob. Lose Brothers, 206 E. Jefferson St., Louisville, Ky.

CLOVER extracted honey in sixties. Abram Brubaker, Lancaster, Pa., Rt. 1.

COMB HONEY for sale. — Gordon C. Pratt, Munnsville, N. Y.

CHOICE CLOVER HONEY in sixties, a can or a carload. Sample, 15c. Schmidt Apiaries, Rt. 4, Bay City, Mich.

FOR SALE — Clover amber comb and extracted. State your wants. H. G. Quirin, 400 South West St., Bellevue, Ohio.

CARLOADS or less, any grade, rail car or semi loads, direct from producer to you. Ask for quotations. Alexander Company, 819 Reynolds Road, Toledo. Ohio.

FINEST BOTTLING HONEY, in new sixties. Wayne Keller, Oskosh, Nebr.

ORANGE BLOSSOM HONEY in new 60's. Peter W. Sowinski, Fort Pierce, Fla.

DELICIOUS WILD RASPBERRY HONEY in new 60's, 15c lb. Also Clover Honey. Sample, 15c. Don Kloepfer, Rt. 3, Grand Ledge, Mich.

HILTNER'S CRYSTAL CLEAR HONEY in decorated tumblers, 5-lb. jars, or 60-lb. cans. Your label if desired. Hiltner's Apiaries, North Creek, Ohio.

WILL PAY 9c delivered for honey, Grade B or better. Please send sample. Western States Apiaries, So. Sioux City, Nebr.

HONEY AND WAX WANTED

BEEKEEPERS TAKE NOTICE—We can not guarantee honey buyers' financial responsibility, and advise all beekeepers to sell for cash only or on COD terms except where the buyer has thoroughly established his credit with the seller.

CASH FOR YOUR HONEY — Light extracted or comb. Regular trade send sample. 60-lb. cans furnished if desired. W. R. Moomaw, Stone Creek, Ohio.

HONEY WANTED—All grades and varieties. Highest cash prices paid. Mail samples. State quantity. HAMILTON & COMPANY, 1360 Produce St., Los Angeles 21, Calif.

WANTED — White and amber honey. Any amount. D. F. Treap, 316 Keenan Ave., Cuyahoga Falls, Ohio.

WANTED—EXTRACTED HONEY— Clover or light amber. C. H. Denny, Rt. 4, Ravenna, Ohio.

HONEY AND WAX WANTED — Mail sample. Advise quantity. BRYANT & SAWYER, 2425 Hunter St., Los Angeles 21, Calif.

CASH for your comb honey and all types extracted. Send sample and best price. Buckeye Honey Co., 3930 N. High St., Columbus 2, Ohio.

WANTED—Comb honey and extracted honey, large or small amounts. Send price list and samples. R. A. Raley, Box 2263, Daytona Beach, Florida.

NEED LARGE QUANTITIES of light and extra light amber clover honey. Our truck will pick up 200 cans or more. Send samples. Cloverdale Honey Co-op., Inc., Fredonia, N. Y.

WANTED honey of all grades. Submit samples. Highest prices paid. Schultz Honey Farms, Ripon, Wisconsin.

CASH FOR BEESWAX. Write as to quantity and we will quote price. Muench-Kreuzer Candle Co., Inc., Syracuse, N. Y.

BEFORE YOU SELL your clover honey contact us. Send samples and tell us how much you have The Delaware White Clover Apiaries, 139 West William St., Delaware, Ohio.

CARLOADS or less of honey and wax. Send sample and price. We have a government contract to pack your price support honey. Advice on request. Alexander Company, 819 Reynolds Road, Toledo, Ohio.

WANTED — White extracted or comb honey. Send sample. Millersport Honey Co., Millersport, Ohio.

FOR SALE

QUEENBEE PAINTING OUTFIT, $1.00; colony records, 10-15c postpaid. Southwick Apiaries, Waban, Mass.

WE CARRY a full line of ROOT QUALITY Bee Supplies. Prairie View Honey Co., 12303 12th St., Detroit 6, Mich.

FOR SALE—Well established package bee and queen business. Ala, care of Gleanings, Medina, Ohio.

XUM

HONEY WANTED
Carloads and less than carloads. Mail sample and best prices in all grades.
C. W. AEPPLER COMPANY
Oconomowoc, Wisconsin

Michigan Headquarters for
Root QUALITY
Bee Supplies
Complete Line of Bee Supplies and Honey Containers
Prompt Service
Michigan Bee and Farm Supply
510 N. Cedar St.
Box 7 Lansing, Michigan

Root Quality Bee Supplies
Prompt service from a complete stock of Bee Supplies.
If driving to Indianapolis for bee supplies, drive to our store, 121 N. Alabama St., and we will secure parking for your car.
A. I. ROOT CO. OF INDIANAPOLIS
121 N. Alabama Street
Indianapolis 4, Indiana

HONEY LABELS
Improved designs, embodying color, balance, simplicity, and distinction. Please send for free samples & prices.
C. W. AEPPLER COMPANY
Oconomowoc, Wisconsin

FOR SALE — Write for large free Bee Supply Catalog. We manufacture bee hives, foundation, tanks, and extractors. Listing many items not found in other catalogs. Walter T. Kelley Co., Paducah, Ky.

WRITE FOR CATALOG — Quality Bee Supplies at factory prices. Prompt shipment. Satisfaction guaranteed. The Hubbard Apiaries, Manufacturers of Beekeepers' Supplies, Onsted, Mich.

The only comb foundation plant in the East. We sell foundation, work your wax, render combs and cappings. Robinson's Wax Works, R. D. 3, Auburn, N. Y.

SIMPLEX TRAP clips queens without handling, $1.00 postpaid. Instant Frame Spacers — eight-nine, specify size, $1.50 postpaid. Free circulars. George Leys, 36 Jackson St., New Rochelle, N. Y.

CLEAN UP AFB WITH SULFA. 25 tablets, 50c; 50, $1.00; 100, $1.50; 1000, $7.00. Write for big 64-page catalog listing many items not found in other catalogs. WALTER T. KELLEY CO., Paducah, Ky.

YOUR WAX WORKED INTO medium brood foundation, 23c pound; 100 pounds, $19.00. Fred Peterson, Alden, Iowa.

FOR SALE—Complete set of Gleanings, 1875-1950. Lacks only six volumes. Francis Higgins, Gallaudet College, Washington, D. C.

FOR SALE: 60 painted ten-frame Langstroth supers, full depth, with drawn comb on wired foundation or three ply, 15 each covers, inner covers, excluders, bottom boards and hive stands, and steam decapping machine. No foulbrood in this equipment; inspected. Load it all on your truck and drive away for $175.00. All located at Quinnesec, Michigan. Woodlot Seed Co., Norway, Michigan.

FOR SALE — 140 colonies of bees at $10.50 per hive. A. J. Schkade, Box 932, Albany, Texas.

FOR SALE: 700 10-frame two-story colonies of bees in fine shape at $12.50 each at yard. W. A. Wiley, West Point, Miss.

FOR SALE—35 colonies of bees 1 and 2 story. 1 20-frame Root radial extractor, 1 Brand power uncapper. Inspection certificate furnished. Van Lingen Bros., Renville, Rt. 1, Minn.

BEES, surplus supers in George West, Texas. Good honey or package bees location. Box 11, Gleanings, Medina, Ohio.

150 COLONIES OF BEES, with this year's honey. Albertus Knoll, Holland, Mich.

15 COLONIES ITALIANS, heavy, 1½ story, Dadant's wired foundation. 45 Dadant supers, drawn combs, honey. Very reasonable, part or all. Albert Fletcher 3rd, Box 435, Warrenton, Virginia.

FOR SALE—130 colonies of bees, 2 and 3 stories, in 10-fr. standard equipment. Disease free. Extra supers. Make an offer. J. C. Dittmer, El Reno, Okla.

BEES AND QUEENS FOR SALE

We use all possible care in accepting advertisements but we cannot be held responsible in case disease occurs among bees sold or if dissatisfaction occurs. We suggest that prospective buyers ask for certificate of inspection as a matter of precaution.

GOOD ITALIAN QUEENS, 60c each. D. W. HOWELL, Shellman, Georgia.

CAUCASIANS—Booking orders for 1951. Lewis & Tillery Bee Co., Route 1, Box 280, Greenville, Ala.

YANCEY HUSTLER QUEENS — 3-band Italians. Bred for honey production. 75c each; $8.00 per dozen. Caney Valley Apiaries, 2500 Nichols, Bay City, Texas.

PACKAGE BEES headed by mountain Gray Caucasians of leather colored Italian queens. Write for prices. Twin Bee Co-op., 3616 Caucasian Circle, Tampa 9, Florida.

BREWER'S LINE BRED Caucasian queens, 1-99, $1.00; 100 and up, 75c. Member ABBA. Brewer Brothers Apiaries, 3616 Caucasian Circle, Tampa 9, Florida.

THREE BANDED Italian Queens, best of quality. Select untested, 1 to 25, $1.00 each; 25 up, 80c each. Satisfaction guaranteed. Alamance Bee Company, Graham, N. C.

FOR SALE—400 colonies of bees, honey house, all equipment, and modern home. In good location. J. T. Camp, Hot Springs, Mont.

Delivery charges on Bambi brand package bees and Bambi brand extra queens WILL BE PREPAID! Please place your 1951 order early. Ecrivez nous en Francais si vous le desirez. Southern Apiaries & Supplies Company, Chatom, Alabama.

MISCELLANEOUS

BEES FOR SALE OR LEASE—Will sell part or complete units fit your requirements. You can purchase part unit lease additional quantities round out your needs. Option to buy later. Proven territory: Idaho, Wyoming, Montana, Nebraska—sweet clover, alfalfa areas. Our processing plant and marketing program assures outlet honey produced from bees purchased or leased. Bright future—low cost operations. Our 45 years production experience ready assist you getting started. Right prices. reasonable terms available. BRADSHAW & SONS, Wendell, Idaho, Largest Individual Producer-Packer in U. S.

SUPPLIES

ATTENTION BEEKEEPERS IN MINNESOTA and adjacent states. We offer a real service on Lewis-Dadant Supplies, honey containers, and labels at a price saving to you. Top market prices paid for extracted honey and beeswax. HONEY SALES COMPANY, 1806-08 NO. WASHINGTON AVE., MINNEAPOLIS, MINN.

SEEDS

SEEDS OF HONEY PLANTS. Ask for free catalogue. Pellett Gardens, Atlantic, Iowa.

SITUATION WANTED

EXPERIENCED BEEKEEPER wants job in South. Good wages expected. 11 years' experience in honey production and queen rearing. Richard Livermore, Collins, Ohio.

EXPERIENCED BEEKEEPER wants job managing apiary for honey production year around. No smoking or drinking. James L. Mason, Box 10, Orpha, Wyo.

Queens

York's Quality Bred Italians
$1.00 Each
The strain preferred by leading honey producers.

York Bee Company
Jesup, Georgia
(The Universal Apiaries)

Three Band and Three Way
D. R. Italian Package Bees and Queens
Jackson Apiaries
Funston, Ga.

Better Bred Queens
Three Banded Italians
Calvert Apiaries
Calvert, Alabama

High Quality
QUEENS
75c each by Airmail
Carlus T. Harper
New Brockton, Ala.

HONEY LABELS
Many Designs
The A. I. Root Company
Medina, Ohio

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HONEY FLOW FORECASTING

(Continued from page 665)

pounds per annum, well-organized advertising should not have much difficulty in raising this low rate of consumption by at least half.

Australian apiarists are very fortunate in having E. Evans of Goodna, Queensland, for Manager of the Australian Honey Institute. He is very keen on the job and with sufficient funds will merit the thanks of all Australian apiarists in the near future.

XUM

Georgia Papershell Pecans
in the shell
5 lbs. net, $2.50 Postpaid
Girardeau Apiaries
Tifton, Ga.

Allen Latham's BEE BOOK
The first and only book ever written by the great master of beekeeping, published December, 1949. 200 pages. 27 chapters. Handsomely bound in cloth and sent to you postpaid in special protective wrapper.
$2.95 Postpaid
HALE PUBLISHING COMPANY
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KNOW interesting facts concerning the bees of India through the INDIAN BEE JOURNAL, published in English by the Bhupen Apiaries (Himalayas), Ramgarrh, Dist. Naini Tal, U.P., India, or available from them. Subs. Rs7/ or 10 shillings or 2.25 dollars per annum. Single copy Rs¼ s. 1/9 or 40 cents (International Money Order). Payment in mint postage stamps of your country accepted.

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GROWING ALFALFA FOR SEED IN UTAH

(Continued from page 664)

(2) They can follow the recommendations for control of injurious insects which are also designed to minimize damage to bees. (3) They can pay the beekeeper for pollination services whenever more colonies are required for satisfactory seed production than is practicable for honey production. Payment for pollination has not been practiced in alfalfa areas of Utah and many factors enter into an equitable remuneration for such service.

It is obvious that provision for a strong, steady supply of honey bees well distributed over the seed-producing fields could best be accomplished by community action. Potentially, seed growers and beekeepers are partners in an enterprise, but because of the wide-ranging habits of bees, this partnership can only be entirely satisfactory on a community-wide basis.

Protect Your Future. Buy Your Extra Savings Bonds Now.

BEE LINES TO THE EDITOR

(Continued from page 651)

Canaan was born. But why growl over little slips like these? They are not serious, and in some instances they add to the spice of life.

"I disagree with R.C.B., the first contributor to Bee Lines in the October issue. If each issue is confined to **one** subject, as he suggested, a great many subscribers are bound to be dissatisfied with every issue that does not show something that interests them, at least one of their pet topics. As your make-up is now there is something in every issue that appeals to almost every beekeeper—and how can the greatest good to the greatest number be better served?

"On page 644, W.B.B., California, wants 'a more **western** magazine' in spite of the fact that in his own state two good correspondents report in every issue; and Oregon, Colorado, Kansas, North Dakota, and Texas are well represented—a very good showing for the West, I think, as compared with the East, where New Hampshire, Connecticut, and Rhode Island have no mention—but we are not complaining.

"P.G.F. in Georgia wants a **southern** magazine. So, Mr. Editor, if you think you can give every part of the country a special edition to suit everybody everywhere, let's see you do it. I think you will find yourself, as Grover Cleveland once said, 'confronted with a condition and not a theory.' "—C. H. Pease, Canaan, Connecticut.

"I am only a beginner and a back yard beekeeper. I started with two colonies that I transferred from old rotten (so-called gums) to modern Root hives. Brother, did I have problems! Oh, yes, I had a beginner's book, but the bees didn't seem to understand the directions any better than I did so we got mixed up and I mean just that. They finally decided to get in there and go to work and they produced some very fine light honey. It was all a hobby and in three years, by dividing crowded colonies and catching swarms that I thought I had fixed where they couldn't swarm I found myself with about 30 colonies of bees to be looked after when I should have been fishing and gardening."—P.G.F., Ga.

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Because of the importance of the above message this space has been contributed by

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Package Bees and Queens —

Much time has been consumed to prepare our bees well for 1951. Book early for best results.

We can still supply queens at October prices as long as the supply lasts.

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Three Isolated Mating Yards to Prevent Mixing Breeds

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Albert G. Hann, Glen Gardner, N. J.

Our OWN New crop of No. 1 Michigan clover honey should be ready for the market this month, July. If you buy honey, be sure and get on our mailing list at once. You surely want the best honey you can buy. Address E. D. Townsend & Sons, Northstar, Michigan. Where the best honey comes from.

* * * * *

ASKED AND ANSWERED

(Continued from page 691)

beekeeper who says that he has tried placing the combs of granulated honey in a container of warm water, leaving them there for a time until the honey in the combs has a chance to liquefy. You might try this out with a few combs and see how it works. We would suppose the honey would get mixed with the water or vice versa. In any event, the water that surrounded the combs could be fed to the bees in order to salvage the honey in the water. It is apparent that your honey contains a high precentage of dextrose and perhaps a low percentage of levulose. Then, too, the atmospheric conditions may have had something to do with the granulation of the honey. In the future it will pay you to extract the honey as soon as the combs are capped over at the close of the honey flow.

QUEER CUSTOMS AND SUPERSTITIONS

(Continued from page 673)

There is a pretty myth that the Rabbis like. 'Tis said that when the Queen of Sheba visited Solomon she held out to him two wreaths, one artificial, the other natural flowers. Unable to tell which was real, Solomon caused the casement to be opened, when lo, a flight of bees entered and clustered on the natural flowers. So the bees were wiser than the king.

Even more remarkable is the English and Scottish myth that bees make a buzzing sound exactly at midnight on Christmas Eve. Some imaginative listeners have even heard them singing "Glory to God in the Highest" at Christmas time.

Much of the information above was obtained from "The Sacred Bee in Ancient Times and Folklore", by Hilda M. Ransome, and published by the Houghton Mifflin Company (1937). The author has done an amazing job of delving into ancient records and literature, and the book abounds in interesting information which I have been unable even to hint at in this brief article.

* * * * *

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